Takayasu Arteritis

Demographic Features, Diagnosis,

Clinical Presentation and Angiographic Profile.

A dissertation submitted in partial fulfillment of

DM-Branch II Cardiology Examination of the

TamilnaduDr. MGR Medical University,

Chennai, to be held in July/August 2013

CONTENTS

BONAFIDE CERTIFICATE

This is to certify that the work presented in this dissertation titled "Takayasu Arteritis Demographic Features, Diagnosis, Clinical Presentation and Angiographic Profile" done towards fulfillment of the requirements of the Tamil Nadu Dr. M.G.R. Medical University, Chennai, for the DM (Branch II) (Cardiology) examination to be conducted in July/August 2013, is a bonafide work of the candidate Dr. Mohammed Suhel Siddiqui, post graduate student at the Department of Cardiology, Christian Medical College, Vellore, performed under my guidance and supervision. This dissertation has not submitted, fully or in part to any other Board or University.

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DECLARATION

I, Dr.Mohammed Suhel Siddiqui, hereby declare that this dissertation entitled "Takayasu Arteritis Demographic Features, Diagnosis, Clinical Presentation and Angiographic Profile" has been prepared by me under the direct supervision and guidance of Dr. George Joseph MD., DM, Professor, Department of Cardiology, Christian Medical College, Vellore. This is being submitted to Dr. M.G.R. Medical University in partial fulfillment of regulations for the DM (Cardiology) examination to be held in July/August 2013.

This dissertation has not been submitted by me either in part or in full on any previous occasion to any university or institution for the award of any degree or diploma.

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ACKNOWLEDGEMENT

I, place my deep sense of gratitude to Dr. George Joseph, Professor, Department of Cardiology, for his able guidance, valuable suggestions, and research concept provided throughout the study. This dissertation would not have been possible without the support and encouragement given by him.

I also thank Dr. Paul V George, Professor and Head, Department of Cardiology, for his constant help during the course of studies. The study would never have been completed on time without his constant support.

I thank Dr. V Jacob Jose, Professor, Department of Cardiology, for the constant encouragement and support.

I thank Dr. Sujith Thomas Chacko for helping in Carotid Doppler Study, and also wish to thank entire faculty, all my colleagues and the office staff in the department of Cardiology, for their moral support and timely help.

At last, but not the least, I thank all the patients who agreed to be a part of this study and helped me in completing this research work.

Dr.Mohammed Suhel Siddiqui

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Abstract

AIM:

To study the demographic profile, clinical presentation, diagnostic features, angiographic findings and treatment outcomes of patients with Takayasu arteritis.

SPECIFIC OBJECTIVES :

1. To study the demographic profile of Indian patients with Takayasu arteritis.
2. To study the modes of clinical presentation of patients with Takayasu arteritis.
3. Evaluation of the applicability of different diagnostic criteria to Indian patients with Takayasu arteritis.
4. To study the angiographic findings in Takayasu arteritis based on aortography, peripheral and coronary angiography and to asses response to medical therapy and interventions in Takayasu arteritis patients.

METHODS:

Observational study done in Department of Cardiology, Christian Medical College

Vellore, in which we analyzed demographic, clinical, epidemiological, angiographic and

treatment data of 125 Takayasu arteritis patients.

RESULTS:

We studied a total 125 patients with Takayasu arteritis over a period of one and a half years. Their demographic, clinical and angiographic profiles were analysed. The mean age of patients in this study was 32 ± 13 years. The disease showed a predilection for females, with female-to-male ratio of 3.5:1. Type V disease was most common in the present study. A third of the patients had cardinal symptoms and half of the patients had heart related symptoms, of which exertional dyspnoea was most common.

About 40% of the patients had neurological symptoms, of which giddiness, blurred vision and syncope were common presentations. Almost 60% of patients were hypertensive, and renal artery stenosis was angiographically seen in 48% of patients. Upper limb ischemia presented as right, left or bilateral upper limb claudication with an equal frequency of 25%, while bilateral lower limb claudication was more common (26%) as compared to isolated right or left lower limb claudication (6% each).

95% of patients met the clinical criteria for diagnosis and 89% of patients had American college of rheumatology score (ACR) ≥ 3. Indian Takayasu Activity Score (ITAS) of ≥3 was found in 95% of patients. Angiography showed 60% involvement of arch vessels, 30% involvement of abdominal aorta and 36% involvement of its major branches. Coronary and pulmonary artery involvement was seen in 14% and 6% respectively. Statistically significant ($p= 0.029$) higher carotid intima-medial thickness >0.9 mm was found in active disease state.

Patients follow up showed good response to both medical and interventional therapy for the disease. Almost half of the patients had active state of disease at the first visit and this decreased to 25% at the last follow-up visit. A third of the patients showed good response and half of the patients showed satisfactory response to medical treatment. About half of the patients had good response to interventional treatment and a third showed satisfactory response to interventional treatment in present study.

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INTRODUCTION:

Takayasu arteritis is an idiopathic inflammatory disease of the large elastic arteries, seen commonly in young patients and resulting in occlusive or ectatic changes, mainly in the aorta and its major branches[1]. Pathogenesis of Takayasu arteritis has long been studied, but the cause still remains uncertain. Patients often first notice disease symptoms in the second or third decades of life. Takayasu arteritis can present as pulseless upper extremities and so is commonly referred to as "pulseless disease"[2,3].

The clinical presentation is varied and can be divided into early inflammatory (pre-pulseless) and late (pulseless) phase[4]. In the majority of patients this disease is insidious in onset. Ishikawa[5] reported insidious onset of symptoms in 76 % and sudden onset in 24%. Diminished or absent peripheral pulses, limb claudication and blood pressure discrepancies[6] are common presentations. Clinical presentation depends upon, the vessel involved by the stenotic or occlusive lesions, such as the aortic arch (pulseless disease), descending thoracic or abdominal aorta (atypical coarctation)[7], renal arteries (reno-vascular hypertension)[8], coronaries and pulmonary arteries. Non-specific features include fever, night sweats, malaise, weight loss, arthralgia, myalgia and mild anaemia**.**

The disease shows geographical variation; Japanese patients present with "reversed coarctation" [9,10]. In south East Asia and Africa, descending thoracic and abdominal aorta involvement with renovascular lesions, called "middle aortic syndrome" is seen more commonly[11].

Takaysu arteritis is a granulomatous pan-arteritis[12] involving all the three layers, causing extensive intimal proliferation and inflammation of the tunica media and adventitia followed by fibrous scarring. More acute inflammation can destroy the arterial media and lead to aneurysm formation[13]. The disease is classified into 5 types on the basis of

angiographic findings[14]. These systems are useful in comparison of patients and for planning management. Aortic incompetence used to be the principal cause of mortality of Japanese patients[15], while cerebrovascular accidents due to hypertension have been the main cause of death in other countries. Various modes of treatment including immunosuppression, vascular surgery, balloon angioplasty and stenting have been used for the management of these patients.

AIM AND OBJECTIVES

AIM:

The Aim of the Study was to study the demographic features, clinical presentation, application of diagnostic criteria, angiographic profile and treatment outcomes in patients with Takayasu arteritis.

Objectives:

1. To study the demographic profile of Takayasu arteritis patients at our centre.
2. To study the spectrum of clinical presentation of Takayasu arteritis patients.
3. Evaluation of patients using different diagnostic criteria (clinical diagnostic criteria, American college of rheumatology criteria and Indian Takayasu Arteritis activity Score).
4. To study angiographic findings in Takayasu arteritis patients based on aortogram, peripheral, coronary and pulmonary angiogram.
5. To study the disease activity based on inflammatory markers ESR and CRP.
6. To assess the response to medical (immunosuppressive) therapy and interventions at follow-up.

Review of Literature

Takayasu arteritis is idiopathic, non specific granulomatous vasculitis involving large and medium size vessels especially aorta and it's main branches as well as pulmonary artery and it's branches[16], has strong female predisposition (8:1)[17] and causes various types of aorto-arterial occlusion and dilatation. Historically, Takayasu arteritis was named after Mikito Takayasu a Japanese ophthalmologist who first called attention to peculiar wreath-like arteriovenous anastomoses around the papillae of the retina, in the year 1908 [18]. Because of its predilection for arch vessels, leading to absent peripheral pulses, this has been called pulseless disease[19] or aortic arch syndrome and descending thoracic or abdominal aorta involvement has been called atypical coarctation[20]. In some instances Takayasu arteritis patients may develop aortic aneurysm and aortic valve incompetence with ascending aortic dilatation[21]. The inflammatory process leads to stenosis and occlusion of the involved arteries or aortic aneurysm formation[22,23]. The clinical presentation depends on the involved vessel that presents the stenotic or occlusive lesions which can lead to secondary hypertension, retinopathy, cardiac involvement, cerebrovascular events and premature death. The prognosis and course of patients with Takayas arteritis shows wide variation and mortality has been reported to be as high as 20% at 5 years[24]. The aetiology of Takayasu arteritis remains unknown and various modes of treatment including steroids, balloon angioplasty and recanalization of occluded vessels, peripheral stenting and vascular surgery have been used for management of these patients. Cardiac, renal and cerebrovascular complications are the major contributors of morbidity and mortality.

EPIDEMIOLOGY:

The typical age distribution of Takayasu arteritis at initial presentation ranges from childhood to the third decade of life[25]. In about 80% of cases, clinical manifestations of the illness appear during the second to third decade of life but early onset of disease in childhood and occasionally up to late middle age[26] at onset (up to 66 years) also have been reported. In a previous case series, Sharma et al[27] have shown that childhood onset of disease is not uncommon, comprising about one third of all cases. Takayasu arteritis patients often notice the symptoms of the disease between 15 and 25 years of age, often there is delay in diagnosis of months to years noted from the onset of first symptoms in Takayasu arteritis patients. NIH studies by Kerr et al suggested that the delay in diagnosis was longer in children[28]and up to four times that of adult patients[29].

Takayasu arteritis is a rare disease showing ethnic differences in epidemiological distribution, reported all over the world and seen most commonly in Asia and Mexico. Takayasu arteritis has a predilection for females, with a female-to-male ratio of 8 – 9: 1; unequal sex distribution[30] is less clear in children.

Takayasu arteritis showed an approximate incidence of 2.6 cases per year per million head of population in North America[31]. This is a progressive disease and has poor prognosis. It is the most common cause of systemic hypertension in Asian children[32.]

Clinical presentation and pattern of vascular involvement in Takayasu arteritis also shows geographical variation. The vessels involved in Takayasu arteritis vary in different parts of the world: aortic arch and arch vessel involvement (reversed coarctation)[33,34], is seen more commonly in Japanese patients, whereas in Indian Takayasu arteritis patients abdominal aorta and its main branches (middle aortic syndrome)[35] are more commonly involved. In Japan aortic incompetence is main cause of mortality while cerebrovascular accident secondary to hypertension is the main cause of death in other countries. Takayasu arteritis patients show premature atherosclerosis because of underlying chronic inflammation.

Genetic predisposition in Takayasu arteritis also shows geographical variation so far as HLA association is concerned. Dong et al[36] and Kasuya[37] et al described high association with HLADR2, MB1, BW52, DW12, DW1 in Japan. In India HLAB5 and B21 are more prevalent in Takayasu arteritis patients.

PATHOGENESIS

Even a century after the first description of Takayasu arteritis the exact etiopathogenesis remains unknown, though various possible aetiologies have been postulated based upon clinical associations. Infection is often considered to play a triggering role in the pathogenesis of Takayasu arteritis. Tuberculosis and viral infection have been investigated for a long time, but so far no definite association has been demonstrated, although Takayasu arteritis is more prevalent in those parts of world having higher incidence of Tuberculosis. In an Indian series of Takayasu arteritis patients Sen. et al[38] reported evidence of tuberculosis in 71% of their patients.

Study of lesions, in active phase showed that inflammation results from cell mediated immunity response. Heat shock protein HSP – 65, plays a important antigenic role[49] in the pathogenesis of Takayasu arteritis. Acute lesions contain mononuclear cell infiltrates that appear to have entered the vessel wall through the vasa vesorum, which subsequently migrate to the arterial intima. These cells are predominantly macrophages and T cells[40]. The presence of various cytokines including IL – 6 and TNF in these granulomatous lesions has prompted various therapeutic options using cytokines targeted biologic agents.

Takayasu arteritis is a pan-arteritis involving all the three layers of the arterial wall and causes extensive intimal proliferation and inflammation of tunica media and adventitia associated with significant fibrous scarring.

The aortic intima shows tree bark appearance in the advanced critical stage. Skipped lesions are a characteristic finding which are produced by a combination of both active inflammatory lesions and old fibrous lesions. Eventually, this inflammation can cause

atherosclerosis. Calcification and thickened intima are also characteristic. It is sometimes difficult to differentiate Takayasu arteritis from atherosclerosis. With the rapid progression of these changes the artery or aorta becomes dilated and forms aneurysm. The histopathological pattern is divided into granulomatous type, diffuse proliferative type and fibrous type.

Histological changes in early stage consist of mononuclear infiltrate associated with perivascular cuffing of the vasavesorum followed latter by intense mononuclear inflammation of the media may occur, sometime accompanied by granulomatous changes , giant cells and patchy necrosis of the media. Panarteritic inflammatory infiltrate causes marked thickening of the affected arteries and subsequent luminal narrowing and occlusion.

Takayasu arteritis has been shown to affect the parenchyma of various organs .Dilated cardiomyopathy; myocarditis and pericarditis have also been reported. Heart failure may be due to valvular incompetence or hypertension. Isolated cardiomyopathy may be the possible mechanism of heart failure in 5% of cases[41]. Aortic incompetence seen in 7.24% [42]Mitral regurgitation is seen in 11.4% [43] cases of Takayasu arteritis. The disease is subdivided into the early or active phase and the late, chronic or inactive phase. Aortic regurgitation also develops and is consider as contributory factors for mortality. Aortic regurgitation develops because of annular or ascending aorta dilation or fibrous thickening, rolling, retraction and calcification of aortic valve. Hypertension develops because of reduced elasticity of arterial wall (wind-kettle), atypical coarctation (proximal hypertension) and renal artery stenosis (renovascular hypertension)[44] .

CLINICAL FEATURES :

Takayasu arteritis clinical manifestation varies from asymptomatic disease found in the form of impalpable pulses or bruit to neurological manifestation in the form of cerebro vascular accident or seizure. Clinical presentation of Takayasu arteritis is basically depends

upon phases of disease, which is divided into two phases, first pre-pulseless phase and second occlusive phase[45,46.]

The phasic clinical presentation of Takayasu arteritis is as follows:

1. **Pre-pulseless phase (Systemic Stage) :**

Characterised by -

Symptoms due to inflammation of the artery before any occlusion.

40-50% of total patients present at this stage.

Constitutional Symptoms[47] include –

- Fatigue
- Fever
- Weight loss
- Non-pleuritic pain
- Myalgia
- Artharlgia.

2. **Occlusive Stage:**

50-60% of patients contribute this stage.

Occlusive stage in vessels produces ischemic phenomenon[48] which are responsible for symptoms depends upon the site.

Vascular[49.]

1. Hypertension – Most common presentation in children
   Due to involvement of renal artery.
2. Syncope – due to involvement of Arch vessels.
3. Back pain – due to involvement of aorta.
4. Claudication of jaw and extremities.

Neurological Symptoms [50]

Dizziness / Giddiness

Syncope

Transient ischemic attack

Stroke

Amaurosis

Blurred Vision

Neck Pain / Carotidynia

Seizure

Heart Related Symptoms[51]

Exertional Dyspnoea

Paroxysmal nocturnal dyspnoea / Orthopnea / Pedal Oedema

Angina

Palpitation

Renal / Aortic :

Hypertension

Renal Failure

Upper limbs symptoms:

In the form of right and left upper limb fatigue and claudication and bilateral upper limb fatigue and claudication.

Lower Limbs symptoms:

In the form of right and left lower limb fatigue and claudication and bilateral lower limb fatigue and claudication

Miscellaneous:

Head ache

Abortion

Gastro intestinal Bleeding

Tuberculosis

Epitasis

Signs in Takayasu arteritis:

- Systolic blood pressure differences more 10 mmHg. In both arm
- Absent or diminished peripheral pulses
- Arterial bruit
- Carotid shudder

- Ophthalmological changes
- Pallor
- Muscle wasting.

Characteristic clinical features of Takayasu arteritis:

- Discrepancies in peripheral pulses and blood pressure - 84 to 96%[52.]
- Hypertension - 33-83% of patients[53] (it reflects renal artery stenosis which is seen in 28-75% of patients)[54].
- Vascular bruits - 80-94% of patients[55]
- Eye involvement - 37% of patients[56].
- Aortic regurgitation - due to dilation of the ascending aorta, separation of the valve leaflets, and valve thickening.
- Hypertension, aortic regurgitation and dilated cardiomyopathy lead to Congestive heart failure.
- Hypertension and ischemia leads to neurological manifestations.
- Pulmonary artery involvement - 14-100% of Takayasu arteritis patients, finding of Oligaemic lung fields correlate with pulmonary vasculopathy in approximately 30% of patients[57].
- Other symptoms include dyspnoea, headaches, carotidynia, myocardial ischemia, chest wall pain and erythema nodosum.

In cases of Takayasu arteritis progression of inflammation causes gradual narrowing of vessel and which leads to development of characteristic symptoms and influenced by development of collateral circulations. The occlusive fibrotic phase is dominated by ischemic symptoms including angina, claudication, syncope and visual impairment, hypertension from renal artery stenosis, aortic regurgitation from aortitis or stroke from carotid artery occlusion.

The disease commonly presents in the second or third decades of life, often with a delay in diagnosis from the onset of first symptoms of few months to years. Kerr[58] suggested that the delay in diagnosis was longer in juveniles, being up to four times that of adult patients. However data from India looking at patients aged less than 18 years demonstrated a delay of only 2.5 to 5.5 months. This discrepancy presumably relates to the difference in disease incidence between the two populations, which results in differences in awareness. The clinical features and progress of young patients with Takayasu arteritis appear to be very similar to those of adults[59].

Hypertension in Takayasu arteritis is due to either aortic or renal artery stenosis and may be secondarily leading to hypertensive encephalopathy, cerebrovascular accident and heart failure[60]. Hypertension is a frequent finding and seen in more than 50% of adult patients[61,62,63.]

Aortic root dilatation and loss of coaption of the aortic valve leaflets leads to aortic incompetence. The severity of aortic incompetence is so that the patient can progress to congestive heart failure because of left ventricular dilatations and left ventricular systolic dysfunction. Direct myocardial involvement, coronary artery disease and hypertension may also lead to congestive heart failure[64].

Transient ischemic attacks, cerebral infarction, headache, hypertensive encephalopathy and seizures are the main neurological manifestations[65] of Takayasu arteritis. 15-20% of patients showed typical ocular finding in Takayasu arteritis patients.

Diagnosis:

Diagnosis of Takayasu arteritis is based upon clinical criteria proposed by Ishikawa in 1988. Ishikawa suggested a set of criterion to differentiate atherosclerosis from the

Takayasu arteritis, with a sensitivity of 84 percent in his series of 96 patients of Takayasu arteritis.

The Ishikawa criteria comprises of one obligatory criteria, two major criteria and 9 minor criteria.

Obligatory criteria - Age < 40 years.

Major criteria - Left mid subelavian artery lesion

Right mid subelavian artery lesion

Minor criteria - Elevated ESR, Carotid artery tenderness, hypertension, aortic incompetence, annulo aortic ectasia, pulmonary artery lesion, left mid common carotid lesion, distal brachiocephalic lesion, descending thoracic aorta lesion, abdominal aorta lesion.

But there are number of pitfalls of this criteria

1. Geographic and racial variations of this disease not considered.
2. Obligatory criteria of age < 40 years - A significant number of patients with Takayasu arteritis had age of onset more than 40 years.
3. Emphasise active signs and symptoms of 1 month duration before the age of 40 years.
4. No clear criteria for abdominal aortic lesion and absence of lesion in aorto iliac region.

Modified Diagnostic Criterion for Takayasu arteritis[66]

Major Criteria

1. Left midsubclavian artery lesion : stenosis or occlusion 1 cm proximal to the left vertebral artery orifice up to 3 cm distal
2. Right midsubclavian artery lesion : stenosis or occlusion from the right vertebral artery orifice to 3 cm beyond
3. Characteristic signs and symptoms (> 1 month duration)
   A. Limb claudication
   B. Pulselessness or blood pressure difference > 10 mm Hg in arms

C. Exercise ischemia

D. Neck pain

E. Fever

F. Amaurosis fugax

G. Syncope

H. Dyspnoea

I. Palpitations

J. Blurred vision

Minor criteria

1. High ESR: Westergren ESR > 20mm at one hour.
2. Carotidynia
3. Hypertension : brachial blood pressure > 140/90 mmHg popliteal blood pressure > 160/90mmHg
4. Aortic regurgitation or annuloaotic ectasia : determined by auscultation, arteriography or echocardiography.
5. Pulmonary artery lesion : lobar or segmental artery occlusion, or stenosis or aneurysm of pulmonary trunk.
6. Left middle common carotid artery lesion: stenosis or occlusion of middle 5 cm portion starting 2 cm from its orifice.
7. Distal innominate artery lesion: Stenosis or occlusion in the distal third.
8. Descending thoracic aorta lesion: narrowing, aneurysm, or luminal irregularity.
9. Abdominal aortic lesion: narrowing, aneurysm, or luminal irregularity.
10. Coronary artery lesion: documented by arteriography in patients < 30 years of age and without risk factors for atherosclerosis.

Clinical Diagnosis of Takayasu arteritis is made by above criteria

If - 2 major

Or

1 major + 2 minor

Or

4 minor criteria met.

Sharma et al modified Ishikawa criteria for the diagnosis of Takayasu artertis. The modification include

1. Removal of obligatory criteria of age < 40 years[67]
2. Inclusion of characteristics signs and symptoms as major criteria.
3. Removal of age in defining abdominal aortic lesion
4. Addition of coronary artery lesion in absence of risk factors

This modified criteria as a sensitivity of 92.5% and specificity of 95% in angiographically proven Indian Takayasu artertis patients and higher than that of Ishikawa criteria. This criteria should sensitivity of 96% and specificity 96% of in a series of japans Takayasu arteritis patients[68].

Ishikawa criteria for diagnosis of Takayasu arteritis showed sensitivity of 92 percent and specificity of 95 percent.

Active Takayasu arteritis disease patients found to have higher sensitivity for Ishikawa criteria.

Another criteria for diagnosis of Takayasu arteritis was given by American College of Rheumatology in 1990[69].

I. Extremity claudication

II. Decreased BA pulsation

III. 10 mmHg differences in Systolic Blood Pressure of both arms

IV. Arteriographic narrowing

V. Subclavian artery or abdominal aortic bruit

VI. Age at onset of less than 40 years

Presence of at least three or more of these criteria make the diagnosis of Takayasu arteritis. ACR criteria for the diagnosis of Takayasu arteritis have sensitivity of 91 percent & specificity of 98 percent.

Clinical features which help to reach the diagnoses are hypertension, vascular bruit, absent or diminished peripheral pulses, asymmetrical arm blood pressures and other ischemic symptoms. Prominent symptoms of the disease are non specific or it may be absent in 70 % of patients in the early stage of the disease.

Angiography is the gold standard tool for the diagnosis and classification of Takayasu arteritis[70,71.]. Non-invasive diagnostic modalities like computed tomography, magnetic resonance angiography allows an early and easy diagnosis of Takayasu arteritis. Magnetic resonance angiography is preferred in paediatric patients because it avoids use of radiation and nephrotoxic contrast. Measurement of arterial wall thickness and acute phase oedema can be measured by magnetic resonance imaging.

^{18}F–fluorodeoxyglucose (FDG) PET computerised tomographic imaging are now used as updated diagnostic tool for early diagnosis of Takayasu arteritis. PET detects labelled glucose uptake, which is an indicator of metabolic activity and up regulated in inflammatory conditions[72] but noticed in other states like cell activations and healing. It allows the visualization of distributions of lesions and area of inflammatory activities in aorta. In response to therapy when inflammation disappears PET showed weak FDG accumulation.

Takayasu arteritis activity usually monitors by non invasive markers like ESR and CRP but these are non specific inflammatory markers and have low sensitivity and specificity. Matrix metalloproteinase 2 can be use for the diagnoses of Takayasu arteritis and 3 and 9 serve as activity markers.

Differential diagnoses includes inflammatory aortitis, syphilis, tuberculosis, rheumatoid arthritis, lupus, Behcet's disease, Kawasaki disease and giant cell arteritis, developmental abnormalities and other aortic pathology but specific features of most of the

above conditions enable the diagnosis. Fibro muscular dysplasia causing hypertension is an important differential diagnosis.

Classification of Takayasu arteritis

Lupi-Herrera et all in 1977 revised the early system of classification in Takayasu arteritis, which was superseded by the new classification of Takayasu arteritis in 1994, by the XIth international conference on Takayasu arteritis based on angiographic findings.

Takayasu arteritis Conference – 1994 – angiographic classification[73]

Type	Vessel involvement
Type I	Branches from the aortic arch
Type IIa	Ascending aorta, aortic arch and its branches
Type IIb	Ascending aorta, aortic arch and its branches, thoracic descending aorta.
Type III	Thoracic descending aorta, abdominal aorta, and / or renal arteries.
Type IV	Abdominal aorta and/or renal arteries
Type V	Combined features of types IIb and IV

C + - involvement of coronary artery. P + - involvement of pulmonary artery.

Clinical classification of Takayasu arteritis (Ishikawa) [74]

Group	Clinical features
Group I	Uncomplicated disease, with or without pulmonary artery involvement.
Group IIA	Mild/moderate single complication together with uncomplicated disease.
Group IIB	Severe single complication together with uncomplicated disease.
Group III	Two or more complications together with uncomplicated disease.

These classifications are useful in planning management and assessment of prognosis. Clinical classification described by Ishikawa was based upon the natural history and complications of the disease[75].

CLINICAL SPECTRUM OF TAKAYASU ARTERITIS:

Moriwaki et al[76] in their study on Takayasu arteritis described Indian and Japanese patients, in which Japanese patients were predominantly female and clinically presented with neurological manifestations like dizziness, vertigo, absent or diminished peripheral pulses and long duration of active phase of disease and reflects involvement of the aortic arch and its main branches while in Indian patients male are relatively more affected with headache, hypertension, and left ventricular hypertrophy suggesting a high frequency of lesions in the abdominal aorta and stenosis of the renal arteries, leading to Reno vascular hypertension.

Takayasu arteritis patients may present with cerebrovascular lesions manifesting as ischemic symptoms which are common even in young patients because of the involvement of arch vessels[77]. About 10 – 20% of patients with Takayasu arteritis have Transient ischemic attacks or ischemic stroke[78]. Stroke occurs from a reduction in cerebral blood flow due to total occlusion of at least 1 or more arch vessels rather than from emboli. Aortocervical bypass originating in the ascending aorta (and not from the subclavian artery) with distal anastomosis to the carotid bulb with the use of saphenous vein grafts is recommended[79].

Atypical Coarctation

Takayasu arteritis is one of the causes of a much less common variety of aortic coarctation, the middle aortic syndrome, apart from the more common congenital coarctation of the aorta. This atypical coarcation occurs anywhere along the length of the aorta except the ascending aorta, whereas coarctation of the aorta is typically located around the aortic isthmus. Satisfactory long-term results and survival seen after surgical management in a series of 33 patients from 1960 to 2004[80] .

Renal Artery Stenosis (Renovascular Hypertension)

Hypertension is a common occurrence in TA and is related to major complications such as congestive heart failure, cardiomyopathy, hemorrhagic stroke, hypertensive

encephalopathy and myocardial infarction[81,82]. Renal artery stenosis seen in 28-75% of Takayasu arteritis patients[83,84]. Renal artery stenosis as well as atypical coarctation or reduced elasticity of the arterial wall can cause hypertension. The less invasive percutaneous transluminal angioplasty is today the first choice of therapy.

Coronary Artery Disease:

Coronary involvement was reported to be approximately 10% [85] in Takayasu arteritis. Coronary artery involvement can be in the form of proximal and ostial coronary artery disease or triple vessel disease. Patient with Takayasu arteritis having significant coronary artery disease can present as effort angina, rarely acute myocardial infarction, congestive cardiac failure or sudden cardiac death. In another study the coronary ostium was involved in 87.5% of cases, and was treated surgically in 95.8%[86] of cases with good outcomes for both stenotic and occlusive lesions. In yet another study obstructive coronary artery disease was found in 41.3% (n=19)[87]. Successful angioplasty, especially with a drug-eluting stent, has been reported in proximal coronary disease in patients with TA[88,89].

Aortic Aneurysm:

Takayasu arteritis commonly affects aorta and it's major branches. The disease involves vessel wall and resulting in luminal irregularity, stenosis and aneurysm formation. In Takayasu arteritis aortic aneurysm is not a rare finding. An aorta having less calcification has more likelihood of developing aortic aneurysm.

Takayasu arteritis patients usually have relatively good long term prognosis. However if aortic aneurysm forms, it can lead to poor outcomes like heart failure due to aortic incompetence and rupture of aneurysm and which may be fatal.

Aneurysm formation is considered one of the major complications determining prognosis in TA[90]. In Japan, the incidence of aneurysmal formation was reported to be

higher, between 22.2% and 31.9%[91] although the incidence of aneurysm ruptures seems to be low[92]. Aneurysms can be treated both by open surgery and by endovascular repair[93,94,95].

Aortic Regurgitaion:

Aortic regurgitation, which is another major complication influencing prognosis, is also prevalent in Japan[96,97]. It is commonly associated with ascending aorta or root dilation, which requires concomitant root and aortic valve replacement. Composite graft root replacement has been considered a gold standard procedure[98]. However, prosthetic graft detachment (anastomotic false aneurysm) including a coronary disorder is the most serious morbidity in the long term, particularly in patients with persisting inflammation. A novel "miniskirt technique", in which the prosthetic valve is not attached directly to the fragile annulus, is used for composite graft root replacement to treat aortic regurgitation with root dilatation.

Congestive heart failure:

Hypertension, valvular incompetence and cardiomyopathy cause heart failure in Takayasu arteritis patients[99]. Aortic incompetence contributes 7 percent and mitral in-competence 11 percent cases of heart failure in Takayasu arteritis. Less commonly heart failure may be due to myocardial dysfunction secondary to coronary artery disease. About 44 to 100 percent of Takayasu arteritis patients showed pulmonary artery involvement as shown in a studied done in Japan and Mexico but this percent is much less in Indian Patients. Indian studies in Takayasu arteritis patients showed 26 to 36 percent involvement of pulmonary artery. Takayasu arteritis patients showed pulmonary hypertension probable mechanisms are direct pulmonary artery involvement or left ventricular systolic dysfunction.

Retinopathy:

Uyama and Asayama[100] described 4 categories of typical retinopathy in Takayasu arteritis patient. This is because of hypoxic changes due to decrease ocular blood flow.

Stage - 1. Dilatation of small vessels

Stage - 2 Systolic retinal arterial pressure - 40 mmHg - Micro aneurysm formation.

Stage – 3 Arteriovenous anastomoses

Stage – 4 Proliferative retinopathy

Vitreous haemorrhage

Retinal ischemia & rubeosis

Cataract

Neovascularisation

Mild and moderate forms - stages 1 and 2.

Severe form - stages 3 and 4.

A cross sectional study[101] of Takayasu arteritis patients done at our centre showed both disease and treatment related eye manifestation. About one third of patients showed impairment of vision, typical takayasu retinopathy was seen in 16% patients, hypertensive retinopathy was noticed in 15% of cases, while ocular ischemic syndrome was found in 7% cases. About one fourth patients was found to have cataract as a complication of treatment (steroid induced cataract). Other rare ocular features noticed are iris neovascularisation, anterior ischemic optic neuropathy, steroid induced glaucoma and uveitis. A statistically significant finding of Takayasu retinopathy and ocular ischemic syndrome was noticed in patients who are having low blood pressure in both upper limbs.

Takayasu arteritis patients are found to have hypoperfusive ocular manifestation in a form of ocular ischemic syndrome and anterior optic ischemic neuropathy[102] shown in a study at the same centre. Secondary uncontrolled hypertension in these patients causes hypertensive retinopathy and some patient noticed advanced changes in the form of, exudative retinal detachment and papilledema.

Natural History of Disease:

Natural course of Takayasu arteritis extends for a long duration (may be many years), with varying level of disease activity at different point of time. Usually a triphasic pattern[103] of Takayasu arteritis disease expression is noticed which consist of non-vascular (systemic) phase, vascular inflammatory phase and burnt out phase. Only a small number of patients showed this classic pattern of disease, reason being that both inflammatory and fibrotic changes may coexist at the same time causing the chronic and recurrent nature of the disease.

Takayasu arteritis patients often showed two distinct phases, pre-pulseless (active phase) and pulseless (chronic) phase. Changes of phase usually take three months time but may be insidious. The chronic phase of disease sometimes has acute exacerbations. Some patient may present directly in the chronic phase without active phase. Inflammation usually causes following presentations in the chronic phase –

Stenosis or Occlusion - 85 %

Aneurysm - 02 %

Combined - 13 %

One-fifth of all patients with Takayasu arteritis present with monophasic and self-limited disease. More aggressive course of disease is noticed in children with Takayasu arteritis disease.

Five years survival in Takayasu arteritis patients after diagnosis is 80% followed by flattening of survival curve with no further mortality. One series[104] has shown a mortality rate as high as 35-40% by five years. Heart failure was found as most common cause of death in Takayasu arteritis patients. Young patients sometimes show spontaneous improvement in clinical manifestations of diseases. Long-term outcome is usually not changed by medical management of disease. Takayasu arteritis children usually reflect ominous prognosis if they have dilated cardiomyopathy.

Previous studies showed that early angioplasty improves survival benefits in Takayasu arteritis patients. Takayasu arteritis disease showed significant morbidity and

premature death. Predictors of premature death in cases of Takayasu arteritis are severe single complication or multiple complications, hypertension cardiovascular involvement and presence of severe functional disability.

Prognosis:

Takayasu arterits patients have relatively good long-term prognosis. Hypertension is important factor in patient of Takayasu arteritis as it causes heart failure, cerebraovascular accidents and renal failure, and makes survival worse by one-sixth. Hypertension or aortic incompetence leading to cardiac failure is the main cause of death in Takayasu arteritis patients. Studies of Takayasu arteritis patients in India showed five years cumulative survival after disease onset was 91% and 84% at ten years, while event-free survival rate was 75% and 64% at five and ten years[105].

Forty percent of deaths in the Indian cohort were the result of congestive cardiac failure. Presence of a severe hypertension, cardiac involvement, and severe functional disability are useful in predicting premature death, premature event, or both on follow-up. Patients with none of above factors have a good long-term prognosis.

20% of patients of Takayasu arteritis have self limiting and monophasic pattern of disease. A picture emerged as long term disability and reliance on steroids to reduce the remission rate [106]. In one longitudinal study of 16 patients , 81% had one or more relapse but 94% achieved long term remission[107].One study suggested that a low ESR, early treatment with steroid and a stable condition at presentation were factors predicted a good prognosis[108].

Disease Activity in Takayasu arteritis

Assessment of disease activity in Takayasu arteritis is difficult. Progression of disease in different phases of Takayasu arteritis, clinical features and vascular inflammation do not always correlate.

A discrepancy was noted in about 40 percents of patients in clinical features and histopathology of samples collected at the time of surgery[109].

Criteria for active disease in patients with Takayasu's arteritis[110].

1. Systemic features (fever, musculoskeletal symptoms, etc)
2. Elevated erythrocyte sedimentation rate.
3. Features of vascular ischemia or inflammation (claudication, vascular pain manifesting as carotidynia, diminished or absent pulse, vascular bruit), asymmetric blood pressure in either upper or lower limbs or both
4. Typical angiographic features.

No accurate laboratory test is available to assess disease activity in Takayasu arteritis patients. Constitutional symptoms are present in 7-36% of patients with active disease[111]; this, when associated with high levels of acute phase reactants is suggestive of active disease state in Takayasu arteritis. Histopathologic examination of samples from involved arteries is considered the gold standard for the diagnosis of active inflammation in Takayasu arteritis, but this is usually not feasible unless the patient is going for surgery.

Constitutional symptoms like easy fatigability, arthralgia, limb claudication and hypertension are usually present in 50 percent of patients at the onset of the disease[112]. After establishing the diagnosis of Takayasu arteritis it is mandatory to decide disease activity to start treatment with immunosuppressive drugs.

1.Parameters used to asses the Disease Activity:

1.1 Acute phase reactants (ESR and CRP)

Takayasu arteritis patients with active disease have an elevated ESR of more than 20 mm in one hour. But ESR was not found to be reliable marker for diagnosis for Takayasu arteritis, as about one third of active Takayasu arteritis patients have a normal ESR and about 40 percent of burned out stage of disease showed an elevated ESR[113].

Persistently elevated ESR is consider as a marker of disease activity, inflammation disease progression. Ishikawa noted in his case series that about half of the patients have elevated ESR. Higher value of ESR is noticed in younger patients, and gradually decreases with age, which reflects the natural history of disease.

Serum markers like acute phase reactants and various modulator of inflammation including cytokines were used to detect disease activity in the past. A study (NSSYS) was performed comparing active Takayasu arteritis patients and healthy adult volunteers using various serological markers such as ESR, CRP, Tissue factor, vWF, tPA, ICAM-1, VCAM-1 and thrombomodullin. None of the markers was found reliable for the assessment of activity of the disease.

1.2 Cytokines and matrix metalloproteinases:

Elevated serum concentration of IL-6 and RANTES (regulated on activation, normal T cell expressed and secreted) was noticed in all of the 18 studied active Takayasu arteritis patients by Marina-Noris et al[114].

Studies in patients have shown significantly elevated levels of both Il-6 and RANTES in the active form of Takayasu arteritis disease; T lymphocytes, NK cells and macrophages infiltrate large vessels because of chemoattractant activities of RANTES [115,116]. Immune trigger on the endothelium produces RANTES. Serum concentrations of IL-6 or RANTES are directly correlated with disease activity.

Enzyme linked immunabsorbant assay (ELISA) was done for assessment of Il-6 and RANTES. The level of IL-6 and RANTES correlated with the ESR but did not match the CRP level[117].

IL-6 and RANTES showed close correlation with Takayasu arteritis disease activity. So constant monitoring of these markers may helpful in immunosuppressive drugs dose adjustment.

Pentarixin 3 (PTK3)[118] is secreted as pro-inflammatory response by immune and vascular cells. It may be used as marker for detecting disease activity and is of importance in Takayasu arteritis patients.

Matrix metalloproteinases are zinc endoproteinases involved in inflammatory reactions and significant correlation has been noted between MMP-3 and MMP-9 levels and disease activity of Takayasu arteritis. Serum level of MMP-2 MMP-3 was directly correlated with disease activity of Takayasu arteritis. MMP-3/TIMP-1 ratio may be a useful marker for disease activity[119].

1.3 NIH (National institute of Health) criteria:

Disease activity of Takayasu arteritis is defined by NIH as -

New onset or worsening of at least 2 of the following four factors:

1. Vascular inflammatory or ischemic symptoms: claudication, diminished or absent pulses and blood pressure in extremities.
2. Increased level of ESR
3. Abnormal angiogram.
4. Fever, polyarthralgia and myalgia etc.

Symptoms should not be because of another disease.

NIH data showed that in about 50 percent of patients, clinical features of disease and serum level of acute phase reactants were not adequate to assess disease activity and so were not reliable enough for therapeutic decisions. The low sensitivity of NIH criteria is a limitation for diagnosing active disease[120].

1.4 Vasculitis assessment and Takayasu arteritis:

A critical analysis of the utility of ESR and CRP and other acute phase reactants levels suggested that they do not reliably identify active disease[121]. It is well established that vascular wall inflammation can persist and arterial lesions progress in presence of a normal

ESR or CRP levels or both[122,123]. So it is important that the treating physician does not rely on the acute phase reactants alone, and instead uses the data in combination with an assessment of patient's symptoms and complete relevant physical examination as well.

Assessment of disease activity is the first priority for clinicians treating new vasculitis. The commonly used methods for assessment of vasculitis are the well-validated activity score Birmingham Vasculitis Assessment Score (BVAS)[124] and the damage score, VDI (Vasculitis Damage Index). BVAS was developed to collect a comprehensive index of disease involvement across 10 organ related symptoms and proved usefull in clinical trials of anti-neutrolphil cytoplasmic antibody-associated vasculitis[125,126]. The quantitative measures of disease severity provided by a BVAS score at presentationoften a guide to long-term prognosis[127.]

Measurment of vasculitis damage index (VDI) shows that scars that develop early in arteries have a poor prognosis[128]. Both the total VDI score and the number of organs involved contributes to fatality. But BVAS and VDI have low sensitivity for the large vessel vasculitis.

The NIH or Kerr criteria are more commonly used to define active disease in patients with Takayasu arteritis[129], and easily applied, are of limited scope and might lack sensitivity. The absence of validated assessment criteria for either disease activity or extent has a limitations on the further clinical trials and research and international collaborations.

The Indian Rheumatology association vasculitis group tried to solve this shortcoming, initially validated BVAS and the vasculitis damage index in Indian patients[130] and subsequently developed a specific Takayasu disease activity score and a damage index. [131,132]. There is a need for clinical assessment tools for large vessel disease like Takayasu arteritis, which is seen more frequently in India.

1.5 Disease Extent Index for Takayasu arteritis (DEI.Tak) :

Disease Extent Index (DEI.Tak) was validated to analyze the actual disease pattern recorded in 145 cases from India[133.] About 60% patients had overt cardiovascular disease. About 50% patients had scored for renal disease due to direct results of major artery disease. 46% patients had systemic symptoms such as fever, headache, arthralgia and myalgia but weight loss was very uncommon in contrast to small vessel vasculitis. Restricted large vessel involvement in Takayasu arteritis is truely reflected by DEI.Tak. Nearly 50% of CVS cases showed pulseloss, followed by pulse inequality, bruit and claudication, pulse loss was commonly seen in brachialis in about a third of cases, after that radial, femoral and foot pulses least commonly involved. The two centres data from India was presented at international meetings[134] and the DEI.Tak has since been used to describe in Turkish cases[135].

This index may be very useful for treatment plan and epidemiological analysis of the disease in various parts of the world.

1.6 Indian Takayasu Activity Score (ITAS) :

The Indian Takayasu Activity score was basically data based and taking the new disease items (occurring in the last three months), that were scored in DEI.Tak . The clinical relevance of ITAS scoring criteria was tested in Rheumatology clinics. Analysis of data showed that 5 organs based systems were not relevant in Takayasu arteritis, hence can be removed from an activity index. All individual items scored in <5% were examined and the majority are omitted. The resultant slimmed-down ITAS2010 (Indian Takayasu Activity Score) contains 43 items in 6 systems, is easy to use for clinical practise and extensively validated by IRVAS.

Importance has been given to 7 items related to the major vessel involvement, that is most relevant clinically. Takayasu arteritis patients follow-up showed that ITAS reflects treatment response and disease flare-up as well. ITAS has been used in therapy trials in India

to assess patients on Mycophenolate mofetil and by the Italian group to study the effect of IL-6 receptor blockage[136].

2. Radiological imaging in Takayasu arteritis

Imaging modalities used for diagnosis and assessments of disease activity are as follows:

2.1 Conventional angiography:

This is performed if an intervention or surgical procedures is planned, and provides descriptive anatomic information.

2.2 MR angiography of aorta and large vessel :

This has the advantages that arterial puncture and exposure to iodinated contrast and radiation are avoided and is the test of choice in young women and children.

However differentiation between vasculitis and atherosclerosis is difficult, limited information of distal aortic branches is obtained and no detailed information about arterial wall anatomy is obtained.

2.3 CT angiogram

This is useful if MRI is contraindicated and provides information of aortic calcification and arterial wall thickness.

2.4 PET: With Fluorine – ^{18}F Deoxyglucose.

This shows regional differences in utilisation of glucose, locates inflammatory regions and is a clinical tool for monitoring disease activity and treatment response[137], however, no information about lumen size is obtained.

Management of Takayasu's Arteritis

Treatment options in Takayasu arteritis patients are:

1. Pharmacological

2. Surgical
3. Recent – less invasive endovascular treatment such as angioplasty and endovascular aneurysmal repair (stent grafts).

Medical therapy:

Antithrombotic & Antihypertensive drugs:

Aspirin therapy is advised to prevent thrombus formation and adequate anti-hypertensive medications are advised to more than 60 percent of patients who have systemic hypertension.

Corticosteroids:

Used in acute phase of Takayasu arteritis and angiographic improvement seen with long time steroid treatment. Efficacy of corticosteroid depends upon disease activity and extent of disease. Decrease in ESR and decreased intensity of inflammatory symptoms are noted with steroid therapy.

Immunosuppressive drugs:

Immunosuppressive drugs such as methotrexate, mycophenolate mofetil, cyclophosphamide or azathioprine are used in treatment of Takayasu arteritis. Side effects of Immunosuppressive drugs are the important determinant of choice of immunosuppressive drugs.

Tocilizumab – Humanized monoclonal antibody anti IL-6 receptor (IL-6R) antibody, rapidly improved clinical manifestations and laboratory parameters and partially reverted signs of vascular ischaemia in a patient with refractory TA[138].

Percutaneous tranluminal angioplasty (PTA) :

In inactive stenotic / occlusive aortic or arterial lesions, recanalization and stenting are an attractive treatment modality in Takayasu arteritis patients. Symptomatic stenosis of 70 to 80 percent or a systolic gradient of more then 50 mm Hg are consider as a indications for PTA.

Successful recanalization and stenting of carotid, subclavian and renal and peripheral arteries have been reported. Endovascular aneurysmal repair for dilated aortic lesions[139] has also been reported.

Surgical treatment:

Before the availability of PTA and stents, surgery was the mainstay of treatment. It still remains an option if lesions are diffuse and not suitable for angioplasty. Kieffer et al[140] reported satisfactory early and long term outcome after surgical renal artery revascularization.

Surgical procedures performed include bypass of the obstructed vessel, endarterectomy, resection and end-to-end anastomosis and aortic valve replacement.

Material & Methods:

- Observational study done in the Department of Cardiology, Christian medical college, Vellore, Tamil Nadu.

Study Protocol:

- We studied 125 patients with Takayasu Arteritis who came to our centre for treatment.
- All patients of Takayasu Arteritis seen in the Cardiology Department from July 2011 to October 2012 were enrolled in this study.
- We studied the demographic, clinical, diagnostic and angiographic profile of these patients.
- Symptoms we looked for were constitutional symptoms, heart-related symptoms, systemic hypertension, neurological symptoms and upper & lower limb fatigue and claudication.
- We evaluated our patients using different diagnostic criteria: clinical, ACR criteria and Indian Takayasu Activity score.
- We also studied the angiographic profile and lesion characteristics in these patients, based on peripheral and coronary Angiograms.
- We classified our patient into 3 groups based on inflammatory markers, active (ESR more than 6 mm at one hour and CRP more than 20 mg/L), smouldering (either of ESR more than 20 mm at one hour or CRP more than 6 mg/L) and inactive (ESR < 20 mm at one hour and CRP < 6 mg/L)
- We also studied the response of inflammatory markers (ESR and CRP) to immunosuppressive therapy and the response to interventional therapy by follow-up evaluations.

Setting of the Study:

- Setting - Department of Cardiology,
  Christian Medical College,

Vellore, Tamil Nadu.

- Cardiology Out patients and inpatients in cardiology wards.
- Period of patient enrolment - July 2011 to October 2012
- Follow-up period - October 2011 to October 2012
- Data collection and analysis - August 2012 to December 2012
- Completion of study - December 2012.

Outcome Measures

- Demographic features
- Clinical presentation
- Angiographic profile
- Follow-up results of treatment
- Effects of immunosuppressive drugs on disease activity

Sample size:

- Based on previous data on Takayasus arteritis disease, it was expected that 60 to 80% of Takayasu arteritis patients would have significant cardiovascular signs and symptoms.
- In order to estimate significant findings such as limb claudication, bruit, blood pressure and pulse asymmetry and angiographic findings, with a precision of 5% to 10% sample size of 85 to 350 was required.
- Keeping in mind the low prevalence of disease we have decided to take a sample size of approximately 125 patients which provided a precision of nearly 8%.

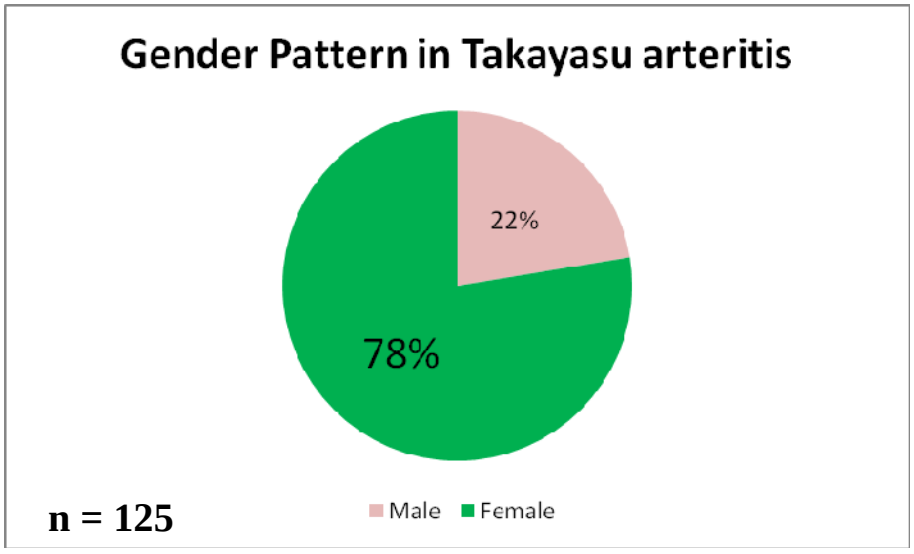
Results:

All categorical variables are expressed in the form of number and percentage, and continuous variables are expressed in the form of mean and standard deviation. The comparison of mean CIMT was across with disease activity (ESR > 20 mm in one hour and CRP > 6 mg/L) by using independent t – test.

Table 1: Demographic features-

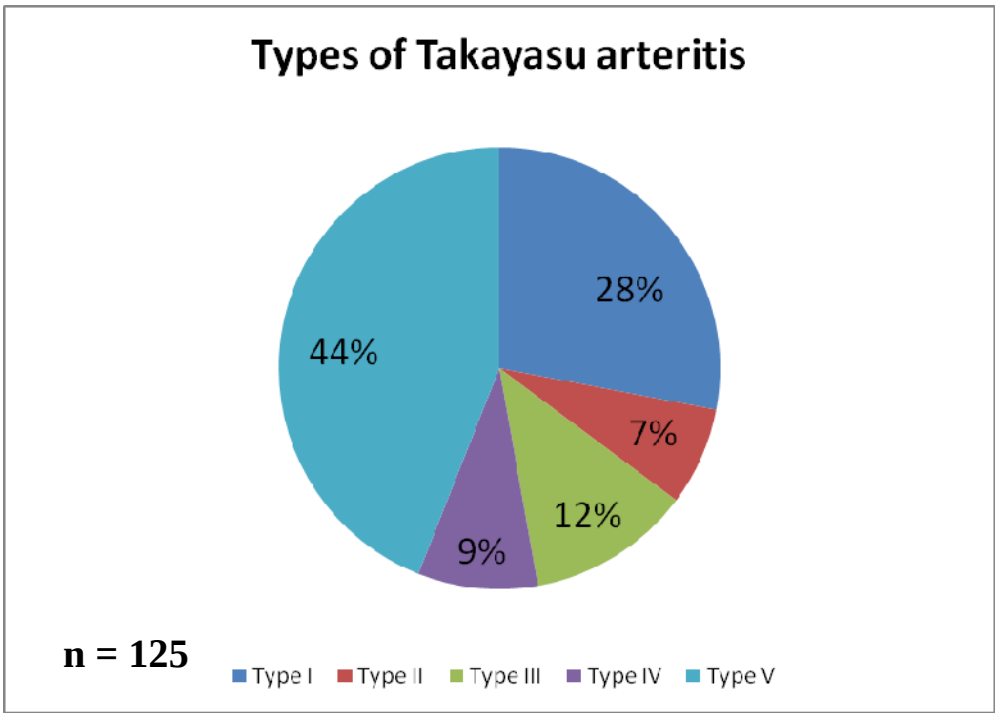
Variables	N (%)	Age ($\bar{m}$ ± SD)	BMI ($\bar{m}$ ± SD)
Male	28 (22)	34 ±15	21 ± 4.0
Female	97 (78)	31 ±11	23 ± 5.0
All Patients	125 (100)	32 ±12	23 ± 5.0

Figure 1



Gender distribution showed predilection for females with female-to-male ratio of 3.5:1.

Figure 2 : Types of Takayasu arteritis –



Type V Takayasu arteritis was most common type in the present study and comprised 44% of total study population followed by type I, type III, type IV and type II.

Table 2 : Cardinal Symptoms

Symptoms	Present N (%)
Fatigue	62 (50%)
Fever	17 (14%)
Weight loss	23 (18%)
Myalgia	23 (18%)
Arthralgia	19 (15%)
All cardinal symptoms	42 (34%)
Any cardinal symptoms	123 (98%)

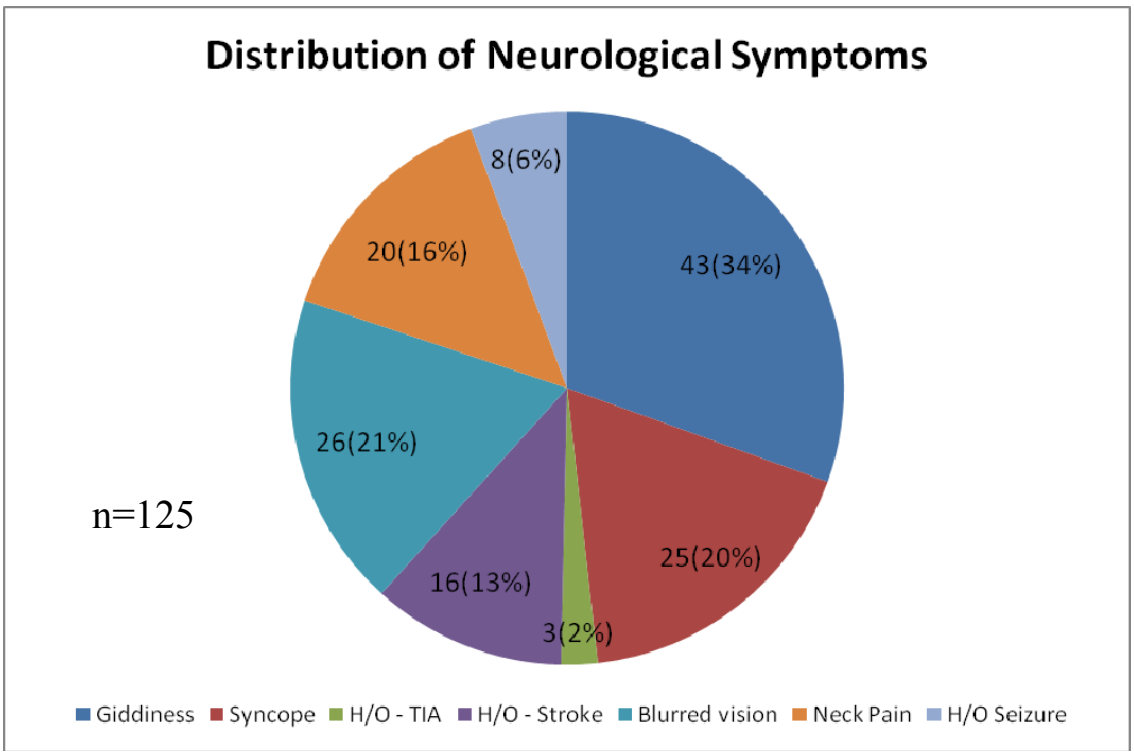
About 1/3rd of patients had cardinal symptoms, of which fatigue, weight loss and myalgia were the most common.

Table 3 : Heart related symptoms

Symptoms	Number (%)
Exertional dyspnoea	56 (45%)
Paroxysmal nocturnal dyspnoea	3 (2%)
Orthopnea	5 (4%)
Pedal oedema	8 (6%)
Angina	13 (10%)
Palpitations	22 (18%)
Any heart related symptoms	62 (50%)

Heart related symptoms are noticed in half of the patients, out of which exertional dyspnoea, palpitations and angina were commonest symptoms.

Figure 3: Neurological Symptoms



About 40% of patients had neurological symptoms and of which giddiness, blurred vision and syncope were the commonest.

Table 4: Mesenteric Symptoms

Symptoms	Number (%)
Post prandial abdominal pain	10 (8%)
Anorexia	10 (8%)
Weight loss	10 (8%)
All Mesenteric symptoms	10 (8%)

Table 5: Renal Symptoms

Symptoms	Number (%)
Systemic hypertension	75 (60%)
Renal failure	3 (2%)
Any renal symptoms	46 (37%)

About 60% of the patients had hypertension and renal artery stenosis was angiographically seen in 48% of cases.

Table 6: Upper Limb and Lower Limb Symptoms

Symptoms	Number (%)
Upper Limb Claudication	
Right	20 (16%)
Left	27 (22%)
Bilateral	27 (22%)
Lower Limb Claudication	
Right	7 (6%)
Left	7 (6%)
Bilateral	33 (26%)

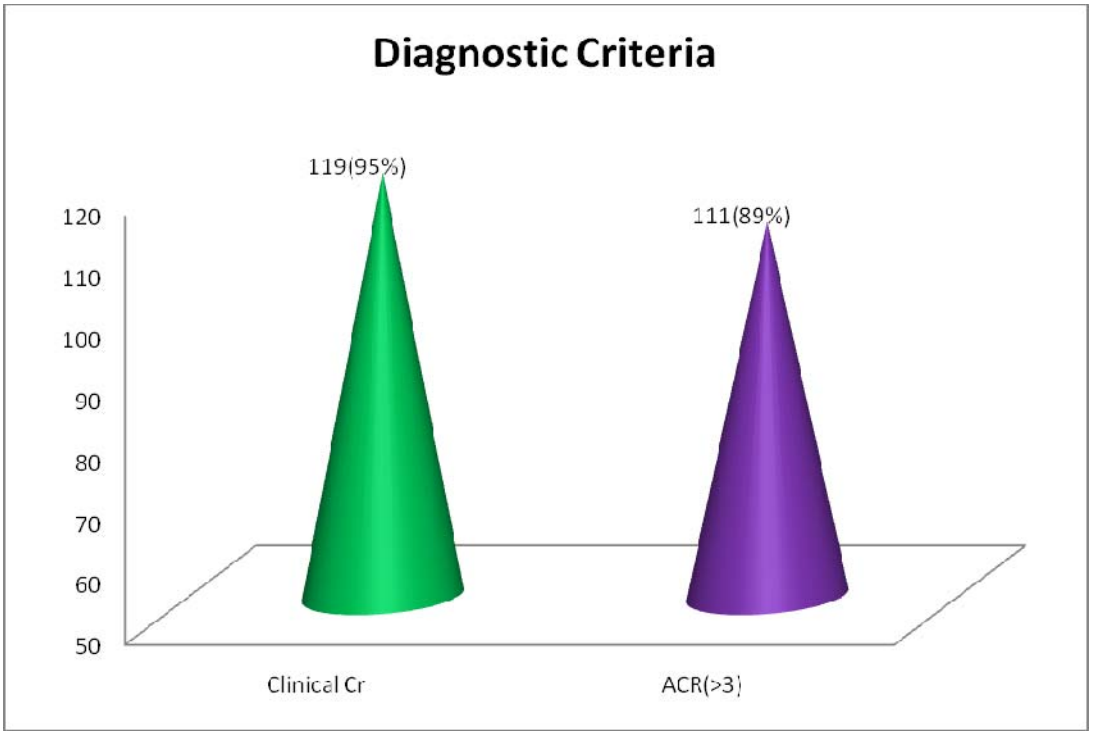
Table 7: Miscellaneous Symptoms

Symptoms	Present
Headache	55(44%)
Abortion	16(13%)
Past Tuberculosis	11(9%)
Epistaxis	8 (6%)
Any miscellaneous symptom	54 (43%)

Table: 8 Clinical Diagnostic Criteria

Clinical Criteria	**N**	**%**
Major Criteria Typical sign and symptoms (>1/12 months)	85	68%
Imaging lesion in mid left subclavian artery	75	60%
Imaging lesion in mid right subclavian artery	56	45%
Minor Criteria ESR (>20 mm)	69	55%
Carotid artery tenderness	19	15%
Blood Pressure (Brachial BP> 140/90,Popliteal BP > 160/90)	52	42%
AR by auscultation, echo or angio	19	15%
Pulmonary artery lesion	7	6%
Left common carotid artery lesion	52	42%
Distal brachio cephalic lesion	15	12%
Descending thoracic aorta lesion	28	22%
Abdominal aorta lesion	38	30%
Coronary artery lesion	17	14%

Figure 4: Diagnostic criteria used.

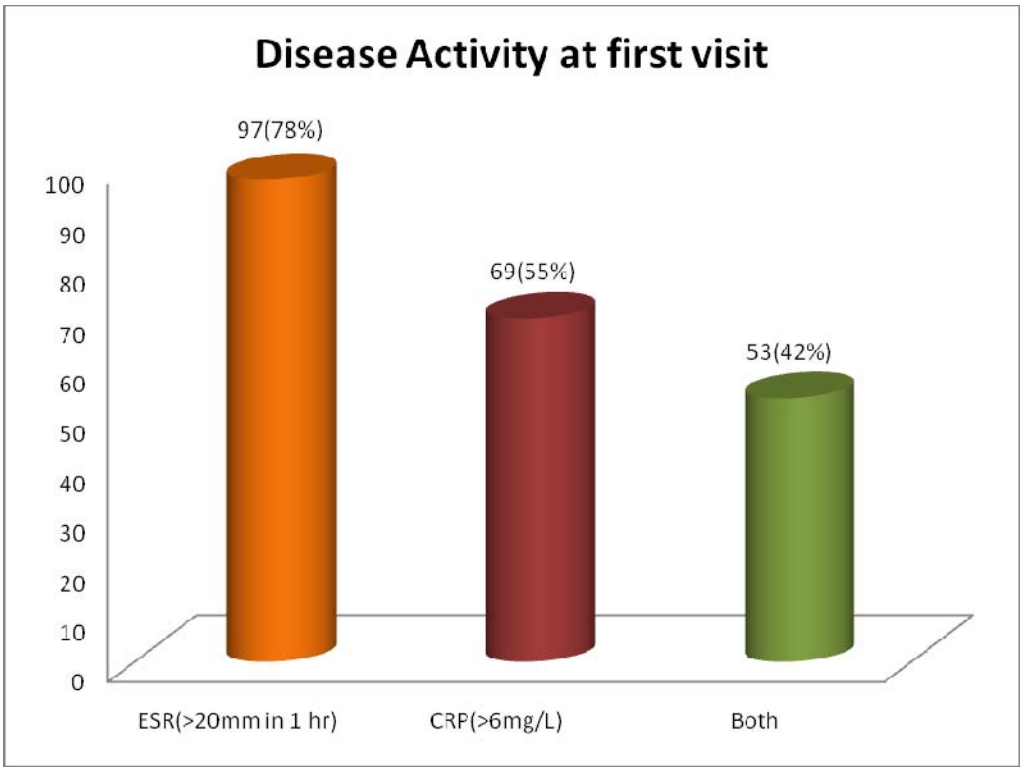


95% of the patients met clinical criteria and 89 % patients had ACR score ≥3, all of the study patients met at least one of the criteria (either clinical or ACR) used for the diagnosis.

Table 9: Disease Activity at first visit

Symptoms	Present	Absent
ESR > 20mm at 1 hour	97 (78%)	28(22%)
CRP > 6 mg / L	69(55%)	56(45%)
Both	53(42%)	72(58%)

Figure 5:



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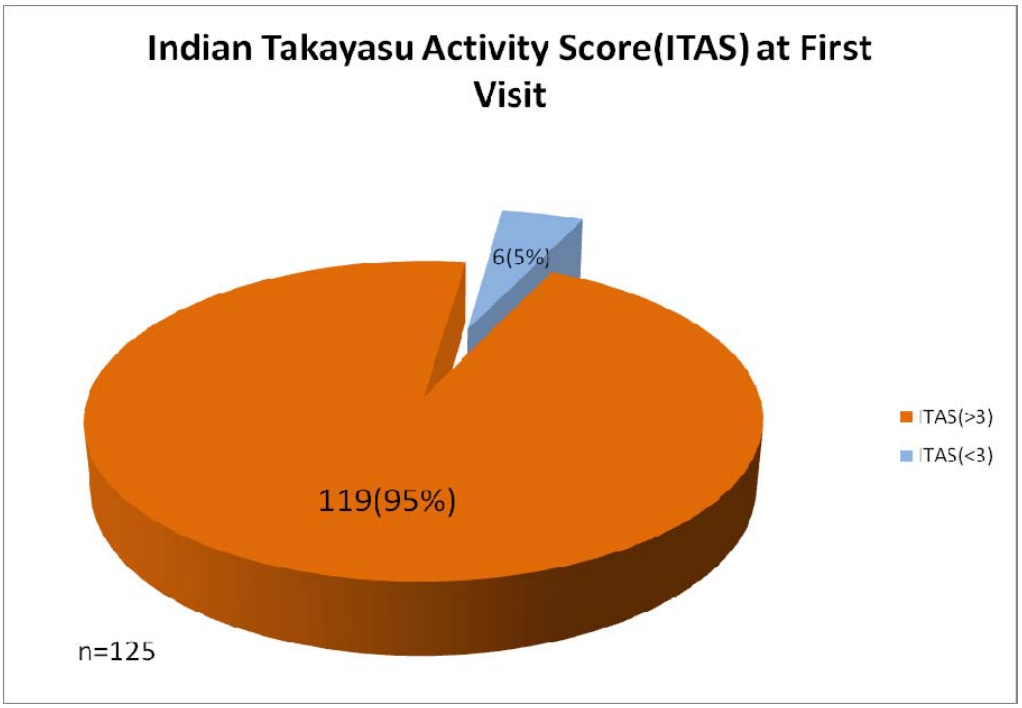
Disease activity at first visit – 78% of patients had ESR > 20 mm at 1 hour and 55% of patients had CRP >6 mg / L at first visit, 42% of patients had elevation of both markers (ESR > 20 mm in 1 hour and CRP > 6 mg/L) at first visit.

Figure: 6 Indian Takayasu Activity Score (ITAS) at First Visit



At first visit 95% of patients showed ITAS score ≥ 3.

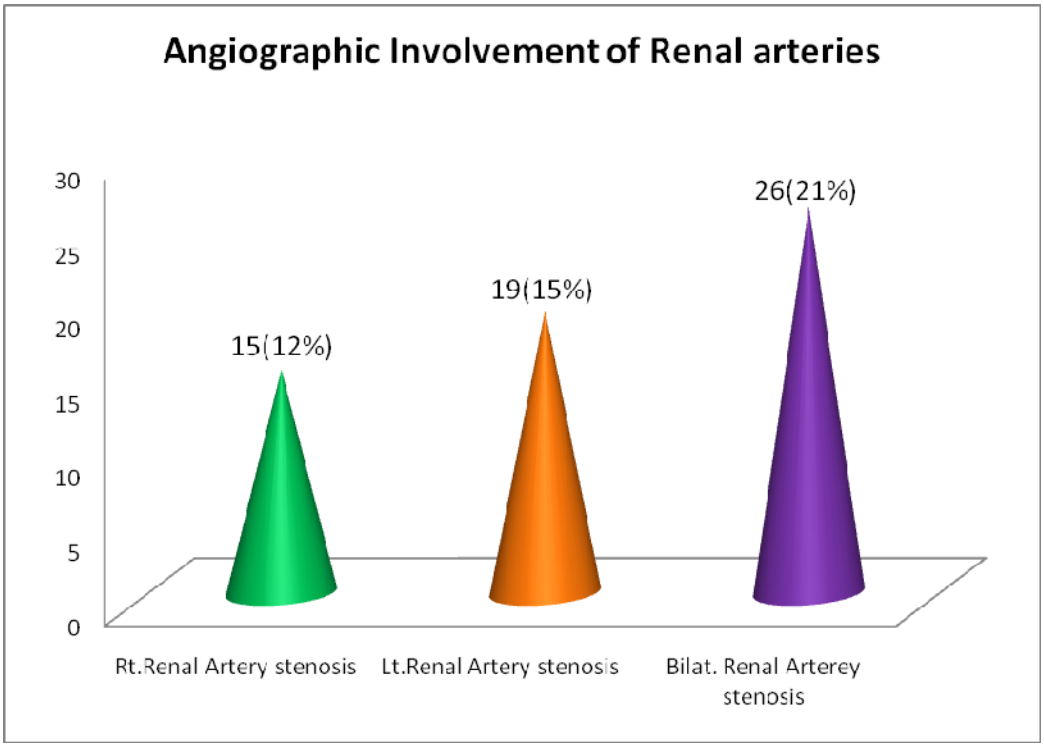
Table 10: Angiographic profile (n = 125)

Zone	Vessel Involved	Number (%)
Aorta	Ascending Aorta	18 (14%)
	Arch of Aorta	4 (3%)
	Descending Aorta	28 (22%)
	Abdominal Aorta	38 (30%)
Arch Branches	Innominate Artery	15 (12%)
	Rt. Subclavian Artery	56 (45%)
	Lt. subclavian Artery	75 (60%)
	Rt. Vertebral Artery	9 (7%)
	Lt. Vertebral Artery	15 (12%)
	Rt. Common Carotid Artery	33 (26%)
	Lt. Common Carotid Artery	52 (42%)
	Rt. Internal Carotid Artery	3 (2%)
	Lt. Internal Carotid Artery	3 (2%)
Visceral Aortic Branches	Celiac Artery	54 (43%)
	Superior Mesenteric Artery	35 (28%)
	Inferior Mesenteric Artery	2 (2%)
	Right Renal Artery	15(12%)
	Left Renal Artery	19(15%)
	Bilateral Renal Artery	26(21%)
Iliac and Femoral artery	Iliac Artery	6 (5%)
	Femoral Artery	2 (2%)

Table 11: Coronary and pulmonary artery involvement

Vessel Involved	Number (%)	Patients Studied
Coronary artery	17 (14%)	115
Pulmonary artery	7 (6%)	105

Figure 7: Angiographic Involvement of Renal arteries



Angiographically right and left renal artery stenosis seen in 12% and 15% respectively, while bilateral renal artery involvement was found in 21% of patients.

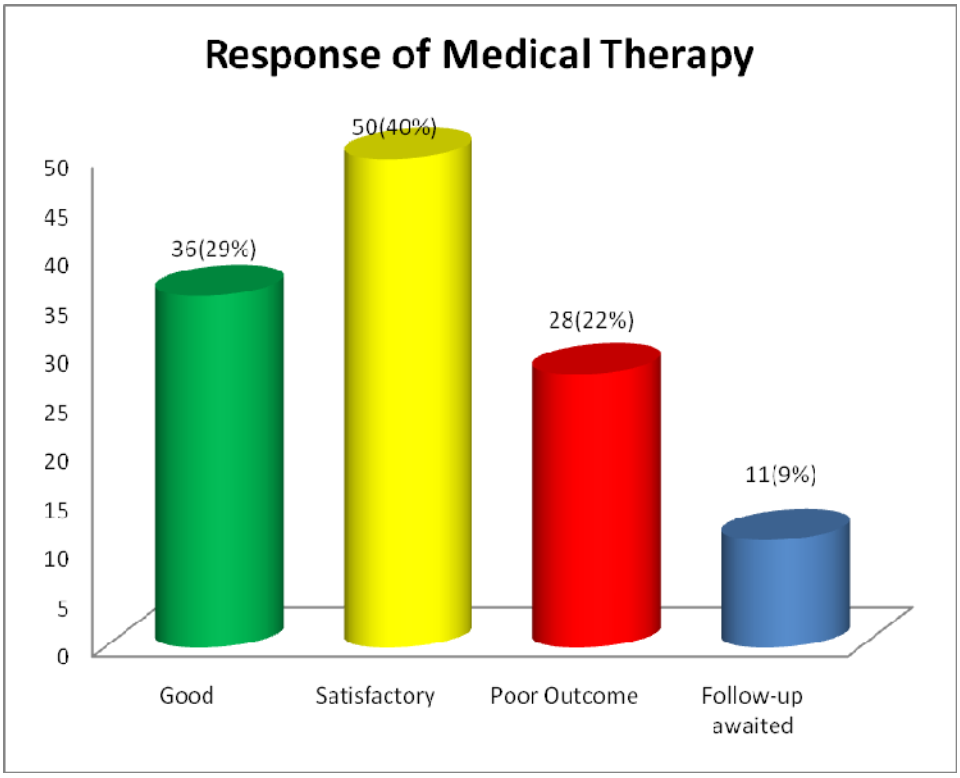
Table 12 : Disease Activity in follow-up

Disease Activity	Active	Smouldering	Inactive
Disease Activity at 1st visit	55 (45%)	51 (41%)	19(15%)
Disease Activity on Last follow up	30 (24%)	51 (41%)	40 (32%)

Active disease is define as ESR more than 20 mm at one hour and CRP more than 6 mg/L, smouldering disease if either of ESR more than 20 mm at one hour or CRP more than 6 mg/L and inactive disease consider when ESR < 20 mm at one hour and CRP < 6 mg/L.

Figure 8: Treatment outcomes

Response to medical treatment at follow-up



About 1/3rd of patients showed good response to immunosuppressive medications and about half of the patients showed satisfactory disease activity parameters.

Good - Both activity markers found low

(ESR < 20 mm at one hour & CRP < 6mg/L).

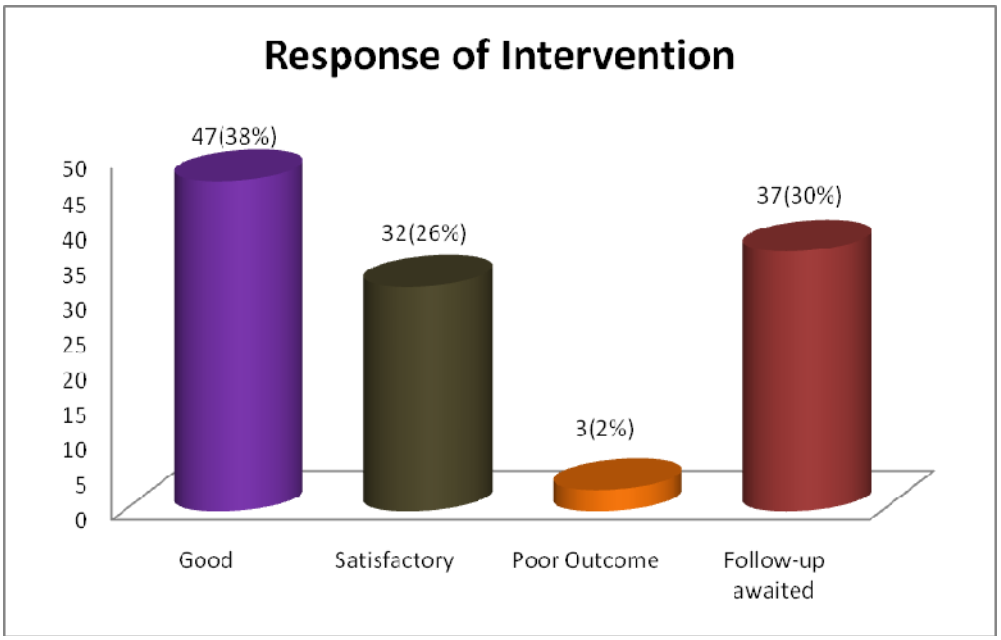
Satisfactory- One disease activity markers found low and other was elevated.

(if either of ESR more than 20 mm at one hour or CRP more than 6 mg/L)

Poor - Both disease activity markers were found elevated

(ESR more than 20 mm at one hour and CRP more than 6 mg/L)

Figure 9: Response to intervention treatment at follow-up



Total intervention done in 119 patients in which about 40% of patients showed good response to previous intervention and 26% of patients showed satisfactory angiographic results in follow up angiogram.

We defined response of intervention treatment based upon follow-up angiogram

Good - Patent deployed stents, repeated procedures not required and only minor restenosis (< 50% of vessel lumen diameter) seen.

Satisfactory-Significant restenosis (> 50% of vessel lumen diameter) or occlusion of one stent or ≤2 repeat procedures required.

Poor -Occlusion of ≥ 2 stents and > 2 repeat procedures in follow-up.

Table 13(A): Correlation of Right Carotid Intima-Medial Thickness and Disease activity in angiographically normal carotid arteries patients.

Variables	CIMT ($\overline{x}$ ± SD)	P value	95% CI
Active Disease	0.87 ± 0.29 mm	0.029*	0.02-0.37
Smouldering Disease	0.67 ± 0.16 mm	1.000*	-0.19-0.23
Inactive Disease	0.65 ± 0.16 mm	0.043*	-0.42- -0.01

(* Adjusted for Bonferrini Correction)

Table 13 (B): Correlation of Left Carotid Intima-Medial Thickness and Disease activity in angiographically normal carotid arteries patients.

Variables	CIMT ($\overline{x}$ ± SD)	P value	95% CI
Active Disease	0.93 ± 0.25 mm	<0.000*	0.12-0.45
Smouldering Disease	0.64 ± 0.18 mm	1.000*	-0.20-0.19
Inactive Disease	0.65 ± 0.17 mm	<0.002*	-0.48- -0.09

(* Adjusted for Bonferrini Correction)

For continuous variables we used the independent T-test.

We also used **ANOVA** test to compare the three patients groups CIMT and we found there is a statistically significant (p-0.029) difference in mean CIMT of three groups and we used the Bonferrini correction to find which group is contributing more and we found active disease group have higher CIMT.

Table 14 (A): Correlation of ESR > 20 mm in one hour and CRP

> 6 mg/Lt and Right Carotid Intima-Medial Thickness

ESR > 20 and CRP > 6 mg/L	CIMT ($\bar{x}$ ± SD)	P value	95% CI
Absent	0.66 ± 0.16 mm	<0.005	0.07 – 0.36
Present	0.88 ± 0.29 mm		

Table 14 (B): Corelation of ESR > 20 mm in one hour and CRP > 6 mg/Lt and Left Carotid Intima-Medial Thickness

ESR > 2 and CRP > 6mg/L	CIMT ($\bar{x}$ ± SD)	P value	95% CI
Absent	0.65 ± 0.17 mm	<0.000	0.16-0.43
Present	0.94 ± 0.25 mm		

We found statistically significant ($p<0.000$) increased CIMT value >0.90 mms in active Takayasu arteritis patients in present study.

DISCUSSION:

The age of presentation of Takayasu arteritis in the present study was 32±13 years. In a large series of 107 patients, from Japan mean age at presentation was 29 years[141] while in a study of 88 patients from our country[142] the mean age at symptom onset was 24±9 years and mean age at diagnosis was 28±10 years.

In present study female patients comprised 78% of the study population, with a female-to-male ratio of 3.5:1, which was comparable to previous studies which showed predilection for females with a wide geographical variation. In Japan female-to-male ratio was noticed 8:1, in Mexico 5:1 and in India 4:1[143] and Israel 1.2:1. In the patient series of Panja et al[144] female-to-male ratio was found 6.4:1.

The most common type of Takayasu arteritis seen in our study was type V (44%), followed by type I (28%) of total population, but this finding does not match with other studies. Agarwal et al[145] reported type III (53%) is most common among north Indian patients and in a large series data of Panja et al[144] showed type IV (36%) is most common type of Takayasu arteritis in patients belonging to Eastern India and Bangladesh.

About 1/3rd of the patients in our study showed various cardinal symptoms, of which fatigue (50%) was the most common symptom, these finding correlate with other studies in which non-specific symptoms like fever, night sweat, malaise, weight loss, arthralgia, myalgia and mild anaemia were common symptoms[146], usually associated with the early or pre-pulseless phase.

In the present study, about 50% of Takayasu arteritis patients had heart-related symptoms of which exertional dyspnoea and palpitations were the most common symptoms. Giddiness was the most common neurological symptom noticed. About 13% of patients had a history of stroke, which was similar to European Takayasu arteritis patient series in which, 10-20% of patients have ischemic stroke or TIA[147].

According to Morwaki et al[148] Japanese patients have higher rate of neurological complications, because more frequent aortic arch involvement as compared to Indian patients

in whom abdominal aorta and renal arteries are more commonly involved[149]. Takayasu arteritis patients can rarely present with stroke as their first symptom[150]. Hypertension and cerebral ischemia can secondarily lead to postural dizziness, seizures and amaurosis.

A small number of patients (about 8%) showed mesenteric symptoms in the form of post-prandial abdominal pain, anorexia and weight loss. About 60% of our study patients had systemic hypertension, which was similar to previous studies in which about 33-83% of patients were found hypertensive[151,152,153]. A common cause of systemic hypertension in Takayasu arteritis patients is renal artery stenosis, other contributory factors being atypical coarctation, decreased baroreceptor reactivity and decreased aortic capacitance.

In patients with Takayasu arteritis as the inflammatory process progresses and gradually leading to stenosis and occlusion, more characteristics clinical features appear but at the same time the development of collateral circulation may ameliorate some features.

In present study upper limb symptoms was documented in the form of right upper limb claudication (16%), left upper limb claudication (22%) and bilateral upper limb claudication in 22% of patients, while bilateral lower limb claudication noticed in 26% of patients. This data matches the study of Panja[154] et al series which showed intermitant limb claudication in 25% of Takayasu arteritis patients.

In this study for establishing the diagnosis of Takayasu arteritis we used clinical and American College of Rheumatology criteria[155]. In the present study more than 95% patients met clinical criteria and which is comparable to modified criteria by Sharma et al which has a sensitivity of 92.5%. 89% of patients found to have ACR score ≥ 3 which is comparable to previously measured sensitivity of 91%. ITAS score was calculated > 3 in 95% of patients.

We assesed the disease activity of our study patients by using ESR (> 20mm at 1 hour) and CRP (> 6 mg/L). ESR > 20 mm at 1 hour was found in 78% of patients and CRP > 6 mg/L was reported in 55% of patients; 42% of patients was found active disease (both) state in the first visit.

We did conventional angiography in all 125 patients which showed that the, most frequently affected vessel was the subclavian artery, aortic involvement was predominantly seen at the abdominal level, greater involvement of left subclavian comared to right subclavian artery and greater involvement of left common carotid artery as compared to right common carotid artery.

Reno-vascular hypertension is a frequent finding in Takayasu arteritis and was seen in 50% patients[156]. Hypertension in Takayasu arteritis patients is mainly due to renal artery stenosis and other contributory factors such as atypical coarctation and reduced elasticity of the arterial wall. Renal artery stenosis causes decreased renal perfusion leading to excess secretion of renin and increased level of aldosterone and finally causes salt and water retention and increased blood pressure. In our study we found 15% involvement of right renal artery and 19% involvement of left renal artery, while in 26% of patients bilateral renal arteries are involved.

Coronary artery involvement in Takayasu arteritis is rare and previous study by Kumar[157] et al mentioned about 9% to 11% coronary artery involvement in Takayasu arteritis presenting as stenosis, occlusion or coronary artery aneurysm formation and mostly involving the ostia of the coronary arteries. In our study we did coronary angiography in 116 patients, out of which 17 (14%) patients showed coronary artery involvement which is marginally higher than the previous studies.

In Takayasu arteritis diseases characteristically involved systemic and pulmonary arteries. Yamada[158] et al found 70% pulmonary artery involvement in the small series of 30 patient and noticed that the extent of arteritis in the major branches of the aorta appear to correlate with pulmonary artery involvement.

Johnston et al described 14 - 100% pulmonary artery involvement in Takayasu arteritis patients based upon method used to described the pulmonary vasculature. Sharma[159] et al studied pulmonary arterial anatomy in Takayasu's arteritis patients by using intravenous

digital subtraction angiography (IV-DSA) and found angiographically evident pulmonary arterial involvement in 14% patients and out of which 1/3rd of cases have abnormal chest radiographs. Takayasu pulmonary artery vasculopathy shows little correlation with the systemic pattern of arterial involvement.

Previous studies have shown increased carotid intima - medial thickness (CIMT) in inflammatory conditions, including Takayasu arteritis[160,161].

In the present study we found the statistically significant (P=0.014) higher mean CIMT >0.9mm in active Takayasu arteritis patients with angiographically normal carotid arteries, as compared to inactive Takayasu arteritis patients.

In the present study we also analysed the response to medical treatment using assessment of disease activity by ESR and CRP at first visit and last follow up visits till December – 2012, and found that about 1/3rd of patients had good and 40% of patients had satisfactory response to medical management; the remaining had persistently active diseases.

Based upon follow-up peripheral angiogram we found that about 40% of patients have good results (deployed stent found patent, follow-up procedure not required or minor ISR seen) and 1/3rd patient showed satisfactory results of interventions and 30% patients are in our follow-up for whom results will seen over time.

CONCLUSION

1. Mean age at presentation of Takayasu arteritis patients in this study was 32±13 years.

2. The disease showed a predilection for females, with female : male ratio of 3.5:1.
3. Type V Takayasu arteritis was most common (44%) followed by Type I (28%) and Type III (12%) disease.
4. A third of Takayasu arteritis patients had Cardinal symptoms.
5. Half the patients in this study had heart-related symptoms of which exertional dyspnoea was most common.
6. About 40% of patient had neurological symptoms, of which giddiness, blurred vision and syncope were commonest.
7. Almost 60% of the study patients were found hypertensive and renal artery stenosis was angiographically seen in 48 % of cases.
8. Upper limb claudication presented as right or left or bilateral upper limb claudication with equal frequency of about 25 %.
9. Bilateral lower limb claudication was more common (26%), as compare to isolated right or left lower limb claudication (6% each).
10. Headache was a common symptom and was found in 44% of patients.
11. 95% of patients met clinical criteria and 89% of patients had ACR score ≥3 and all of the study patients met atleast one diagnostic criteria, ITAS score was found≥3 in 95% of patients
12. Angiographic profile of Takayasu arteritis disease in this study showed significantly more involvement of arch vessels compare with abdominal aorta and it's branches.
13. Coronary artery involvement is seen in 14% and pulmonary artery involvement in 6% of patients.
14. Almost half the patients were in active state of disease at first visit, this decreased to 25% at last follow up.
15. A significantly higher proportion of patients with active disease had CIMT > 0.9mm.
16. A third of patients showed good and half the patients showed satisfactory response to

medical treatment.

17. Half the patients had good response to intervention and one third patients showed satisfactory response to intervention in this study.

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TAKAYASU'S ARTERITIS – Demographic Features, Diagnosis, Clinical Presentation and Angiographic Profile

CASE STUDY PROFORMA

Case Study Serial No. _____ CMC H.No -

Patient Name : _____

Father's / Husband's Name : _____

Age : _____

Sex : _____

Year of Birth : _____

Body Weight : _____ Kg.

Height : _____ cm.

BMI : _____ Kg. / m^2BSA

Marital Status : Married / Unmarried

Contact No. & Address

Mobile 1 : _____

Mobile 2 : _____

Landline 1 : _____

Landline 2 : _____

Email ID :

Address : _____

_____

_____

State :

Date of Enrolment : _____

Type of TA : _____

Year of onset of symptoms : _____

SYMPTOMS DETAIL:

Symptom Status	:	Asymptomatic
		Symptomatic
		Unknown
Constitutional Symptoms	:	None
		Fatique / Malaiase
		Fever
		Weight Loss
		Myalgia / Arthralgia
		Multiple
Heart Related	:	None
		ExertionalDysnoea
		PND / Orthopnea / Pedal Edema
		Angina
		Palpitation
Neurological	:	None
		Dizziness / Giddiness
		Syncope
		TIA
		Stroke
		Amaurosis
		Blurred Vision
		Neek Pain / Carotido-dynia
		Seizure
		Multiple
Mesenterie	:	None
		Postprandial abd.pain
		Anorexia / Weight loss
Renal / Aortic	:	None
		HTN

		Renal Failure
Upper limbs symptoms	:	None
		Right upper limb fatigue
		Right upper limb claudication
		Left upper limb fatigue
		Left upper limb claudication
		B/L upper limb fatigue
		B/L upper limb claudication
Lower Limbs symptoms	:	None
		Right Lower limb fatigue
		Right Lower limb claudication
		Left Lower limb fatigue
		Left Lower limb claudication
		B/L Lower limb fatigue
		B/L Lower limb clandication
		Critical Isehemia
Miscellaneous	:	None
		Head ache
		Abortion
		GF Bleeding
		Tuberculosis
		Epistaxis

CLINICAL DIAGNOSTIC CRITERIA:

1. **Obligatory criteria – Age < 40 years**

   Typical Sign and Symptoms for > 1 / 12 : Y / N / Unknown

2. **Major Criteria**

Imaging Lesion in Mid LSCA : Y / N / Unknown

Mid RSCA :

Total Major Criteria : 1 / 2 / 3 / None

3. **Minor Criteria**

ESR > 20 : 1 / 2 / 3 / None

Carotid artery Tenderness : 1 / 2 / 3 / None

Brachial BP > 140/90

Popliteal BP > 160/90 : 1 / 2 / 3 / None

AR by auscultation, echo or angio : 1 / 2 / 3 / None

P A lesion : 1 / 2 / 3 / None

LCCA lesion : 1 / 2 / 3 / None

Distal Brachio cephalic lesion : 1 / 2 / 3 / None

Desc.Thoracie aorta lesion : 1 / 2 / 3 / None

Abd. Aorta lesion : 1 / 2 / 3 / None

Coronary Artery lesion : 1 / 2 / 3 / None

Total Minor Criteria : 1 / 2 / 3 / None

Clinical Criteria Met : (2 Major /1 Major+2 Minor/4 Minor)

Y / N / Unknown

ACR CRITERIA:

Extremity Claudication : 1 / 2 / 3 / None

Decreased BA pulsation : 1 / 2 / 3 / None

10 mmHg diff. In SBP both arms	:	1 / 2 / 3 / None
Arteriographic narrowing	:	1 / 2 / 3 / None
SCA or abd aortic bruit	:	1 / 2 / 3 / None
Age at onset of ≤ 40 yrs.	:	1 / 2 / 3 / None
Total score out of 6 / Six	:	Zero / One / Two / Three / Four / Five
ARA Criteria met (>3)	:	1 / 2 / 3 / None

Bilateral Carotid Artery Doppler Study:

CIMT Right -
CIMT Left -

CLINICAL CRITERIAL MET:

Yes C+ - Y/N/UK

No P+ - Y/N/UK

Unknown

ACR CRITERIA MET:

Yes
No
Unknown

ITAS SCORE:

Extent of Disease (Angiographic Profile)

Aorta

Part	Lesion Characteristic	Intervention Done Y/N (PTA/Stent-Dt)
Asc. Aorta		
Arch Aorta		
Desc. Aorta		
Abd. Aorta		

Innominate	Prox.		Mid.		Distal			Prox.		Mid		Distal	
	LC	ID	LC	ID	LC	ID		LC	ID	LC	ID	LC	ID
RSCA							LSCA						
RBxA							LAxA						
RBrA							LBrA						
RVA							LVA						
RCCA (Ostial)							LCCA (Ostial)						
RCCA (Rest)							LCCA (Rest)						
RICA							LICA						
RECA							LECA						

	Part & Lesion Characteristics	Intervention Done Date
Coronary Arteries		
Pulmonary Arteries		
Celiac Artery		
S.M.A.		
I.M.A.		

RT Renal Artery	L.C.	I.D	LT Renal Artery	L.C.	I.D
Upper			Upper		
Lower			Lower		
Iliac			Femoral		
Common Iliac			Common		
Ext.Iliac			SFA		

Lesion Characteristics (L.C.) 1 – Irregularity / Calcium
2 – Stenonis
3 – Occlusion
4 – Aneurysm

Intervention Done (I.D) P – PTA
S – Stent

Baseline Data:

Baseline ESR

CRP

Baseline Activity

Active: ESR > 20

CRP > 6

Smouldering: ESR > 20

(or)

CRP > 6

Not both

Inactive: ESR ≤ 20

+

CRP ≤ 6

Drugs: None

Prednisolone

Azathioprine

Methotrexate

Prednisolone + Azathioprine

Prednisolone + Methotrexate

Azathioprine + Methotrexate

Prednisolone + Azathioprine + Methotrexate

Deflezocort

MMF

Deflezocort + MMF

Deflezocort + Azathioprine

Prednisolone + MMF

Deflezocort + Methotrexate

SUMMARY OF CASE REPORT:

- Type of Takayasus's Arteritis -

- Response of ongoing Medical management -
- Results of Intervention in follow up (Angiographic profile) -

ACR CRITERIA:

Extremity Claudication : 1 / 2 / 3 / None

Decreased BA pulsation	:	1 / 2 / 3 / None
10 mmHg diff. In SBP both arms	:	1 / 2 / 3 / None
Arteriographic narrowing	:	1 / 2 / 3 / None
SCA or abd aortic bruit	:	1 / 2 / 3 / None
Age at onset of ≤ 40 yrs.	:	1 / 2 / 3 / None
Total score out of 6 / Six	:	Zero / One / Two / Three / Four / Five
ACA Criteria met (>3)	:	1 / 2 / 3 / None

APPENDIX - 2

ITAS – Indian Takayasu Activity Score	
Tick Box only if abnormality is present (new or worse) within past 3 months. Tick box only if abnormality is ascribed to current, active vasculitis.	Visit Date : Patient ID

1. SYSTEMIC

None ☐

Malaise/Wt. Loss>2Kg ○

Myalgia/Arthralgia/Arthritis. ○

Headache ○

Fever ○

2. MUCOUS MEMBRANES

None ☐

Present ○

3. EYES

None ☐

Blurred Vision ○

Sudden Vision Loss ○

Other ○

4. CHEST

None ☐

Persistent Cough ○

Dyspnea/Wheeze ○

Hemoptysis/Hemorrhage ○

Massive Hemoptysis ○

Respiratory Failure ○

5. ABDOMEN

None ☐

Severe Abdominal Pain ○

Bloody Diarrhea ○

Gut Perforation/Infarct ○

6. RENAL ☐

None

Hypertension (Diastole >90) ○

"" Systolic >140 ○

Proteinuria (>1+/0.2g/24H) ○

Hematuria (>1+/10RBC/ml) ○

Creatinine (1.4-2.73 mg/dl) ○

Creatinine (2.75-5.5mg/dl) ○

Creatinine (>5.5 mg/dl) ○

Rise in creatinine>30% or
> 25% fall in creatinine clearance. ○

7. Nervous System

None ☐

Organic Confusion/Dementia ○

Seizures (not hypertensive) ○

Stroke ○

Syncope ○

Cord Lesion ○

8. Genitourinary System

None ☐

Sexual Impotence ○

Abortions ○

9. CARDIOVASCULAR SYSTEM

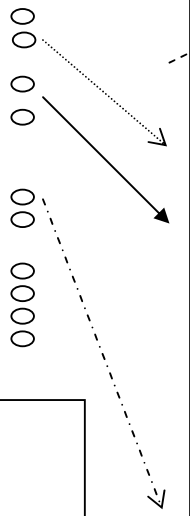
None ☐

Bruits (see 9a)
Pulse Inequality (See 9b)

New Loss of Pulses (See 9c)
New Loss of pulses with threatened loss of limb.

Claudication (See9d)
Carotidodynia

Aortic Incompetence
Pericardial Pain/Rub
Ischemic Cardiac Pain
Congestive Cardiac Failure



9a. Bruits	**R**		**L**
Carotid	○		○
Vertebral	○		○
Subclavian	○		○
Renal	○		○
Abdominal		○	
Inguinal	○		○

9b. Pulse and BP Inequality

Present		○

9c. Pulse Loss

Carotid	○		○
Subclavian	○		○
Brachial	○		○
Radial	○		○
Femoral	○		○
Popliteal	○		○
Posterior Tibial	○		○
DorsalisPedis	○		○

9d. Claudication

Arm		○
Leg		○

Cardiology Opinion/Tests

No Active Vasculitis	○
Pericarditis	○
Myocardial Infarct/Angina	○
Cardiomyopathy	○

10. Other Vasc items:

11. Physician Global Opinion (Active / Grumbling or persistent / Inactive):

12. ESR : **CRP:**

CONSENT FROM

Study Title: TAKAYASU'S ARTERITIS – Demographic Features, Diagnosis Clinical Presentation and Angiographic Profile

Study Number:

Subject's Initials:_____ Subject's Name:_____

Date of Birth /Age:_____

Please initial Box

(Subject)

(i) i confirm that I have read and understood the information sheet dated _____ for the above study and have had the opportunity to ask questions.[ ]

(ii) I understand that my participation in the study is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. [ ]

(iii) I understand that the Sponsor of the Clinical trial, others working on the Sponsor's behalf, the Ethics Committee and the regulatory authorities will not need my permission to look at my health records both in respect of the current study and any further research that may be conducted in relation to it, even if i withdraw from the trial. I agree to this access. However, I understand that my identity will not be revealed in any information released to third parties or published. [ ]

(iv) I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purpose(s) [ ]

(v) I agree to take part in the above study.

Signature (or Thumb impression) of the Subject/Legally Acceptable Representative:_____

Date: _____/_____/_____

Signatory's Name: _____

Signature of the Investigator:_____

Date: _____/_____/_____

Study Investigator's Name: _____

Signature of the Witness:_____

Date: _____/_____/_____

Name of the Witness: _____

GLOSSARY FOR THE MASTER DATA SHEET

A – Case No.

B – pt. Name

C – Hosp. No.

D – Age
E - Sex of the patient
1 = Male, 2= Female
F – BMI = Body Mass Index.
G – Type of TA
H – Year of onset of the symptoms
I – Symp_Status
0= Asymptomatic, 1 = symptomatic
J – C_ Symp_None (Constitutional symptom None)
0= Constitutional symptom present , 1=Constitutional symptom absent.
K – C.Symp_Fatigue
0=Fatigue absent , 1= Fatigue present.
L – C.Symp_Fever
0= Fever absent , 1= Fever present.
M – C.Symp_Wt. Loss
0=Wt. loss absent , 1= Wt loss present.
N – C.Symp_Myalgia
0=Myalgia absent , 1= Myalgia present.
O – C.Symp_Arthralgia
0=Arthralgia absent, 1=Arthralgia present.
P – H.RelatedSymp_none
0= H related symptoms present, 1= H related symptoms absent.
Q – H.Related_EDysnoea
0= Effort Dysnoea absent, 1=Effort Dysnoea present.
R – H. Related PND
0=PND absent, 1=PND present.
S - H. Related Orthopnea
0=Orthopneaabsent , 1=Orthopnea present
T – H.Related_Pedaledema
0=Pedal edema absent, 1=Pedal edema present.
U – HRelated_angina
0=angina absent, 1=angina present.
V – H Related_Palpitation
0=Palpitation absent , 1=Palpitation present.
W – Neurological_None
0=Neurological symptoms present, 1=Neurological symptoms absent.
X – Neurological_Giddiness
0=Giddiness absent, 1=Giddiness present.
Y – Neurological_Syncope
0=Syncope absent, 1=Syncope present.
Z – Neurological_TIA
0=TIA absent , 1=TIA present.
AA – Neurological_Stroke
0=H/O stroke absent, 1=H/O stroke present.
AB – Neurological_Blurredvision
0=Blurred vision absent, 1=Blurredvision present.
AC – Neurological_Neckpain
0=Neck pain absent, Neckpain present.
AD – Neurological_Seizure
0=Seizure absent, 1=Seizure present.
AE – Mesenteric_Postabdpain
0=Post prandabd pain absent 1=Post prandabd pain present.

AF – Mesenteric_Anorexia
0=Anorexia absent, Anorexia present.
AG – Mesenteric Wt. loss
0=Wt. loss absent, 1=Wt. loss present.
AH – Renal_None
0=Renal symp present, 1=Renal symp absent.
AI – Renal_HTN
0=HTN absent, 1=HTN present.
AJ – Renal_Renal failure
0=Renal failur absent, 1=Renal failure present.
AK – UL_None
0=Upper limb symptoms present, 1=Upper limb symptoms absent.
AL – UL_RULF
0=Rt Upper Limb Fatigue absent, 1=Rt Upper Limb Fatigue present.
AM – UL_RULC
0= Rt Upper Limb claudication absent, 1=Rt Upper Limb claudication present.
AN – UL_LULF
0=Lt Upper Limb Fatigue absent, 1= Lt Upper Limb Fatigue present.
AO – UL_LULC
0=Lt Upper Limb claudication absent, 1=Lt Upper Limb claudication present
AP – UL_BULF
0=B/L Upper Limb Fatigue absent, 1=B/L Upper Limb Fatigue present.
AQ – UL_BULC
0=B/L Upper Limb claudication absent,1=B/L Upper Limb claudication present.
AR – LL_None
0=Lower Limb symptoms present, 1=Lower Limb symptoms absent.
AS – LL_RLLF
0=Rt lower limb fatigue absent, 1=Rt lower limb fatigue present
AT – LL_RLLC
0=Rt lower limb claudication absent,1=Rt lower limb claudication present.
AU -- LL_LLLF
0=Lt Lower Limb Fatigue absent, 1=Lt Lower Limb Fatigue present
AV – LL_LLLC
0=Left Lower Limb claudication absent,1=Left Lower Limb claudication present.
AW -- LL_BLLF
0=B/L Lower Limb Fatigue absent, 1=B/L Lower Limb Fatigue present.
AX -- LL_BLLC
0=B/L Lower Limb Claudication absent, 1=B/L Lower Limb claudication present.
AY --Misc_None
0=Miscallenious symptoms present,1=Miscallenious symptoms absent.
AZ --Misc_Headache
0=Headache absent,1=Headache present.
BA --Misc_Abortion

0=H/O - Abortion absent,1-H/O - Abortion present.
BB -Misc_TB
0=H/o TB absent , 1= H/o TB present.
BC --Misc_Epist.
0= H/o Epist. Absent, 1=H/o Epist. Present.
BF --ClinicalCr.Met
0=Clinical Cr. Not Met, 1=Clinical Cr.Met
BG --ACR Cr. Met
0=ACR Cr. not met, 1=ACR Cr. met.
BH – Total ACR score.

BI -- ITAS score.
BJ – ESR.
BK – CRP
BL - ESR_CRP
BM - cIMT Rt
BN – Mean Rt CIMT
BO – cIMT Lt
BP -- Mean Lt CIMT
BQ –Aorta_Ascending
0=Ascending aorta not involved,1=Ascending aorta involved.
BR--Aorta_Arch
0=Arch aorta not involved, 1=Arch aorta involved.
BS—Aorta_Desc
0=Descending aorta not involved,1=Descending aorta involved.
BT—Aorta_Abd
0=Abdominal aorta not involved,1=Abdominal aorta not involved.
BU—Innominate involvement.
0=Innominate not involved,1=Innominate involved.
BV –RSCA involvement
0=RSCA not involved, 1=RSCA involved,
BW—LSCA lesion
0=LSCA not involved, 1=LSCA involved.
BX – RVA_Lesion
0=RVA not involved, 1=RVA involved.
BY – LVA Lesion
0=LVA not involved, 1=LVA involved.
BZ - RCCA lesion
0=RCCA not involved, 1=RCCA involved.
CA - LCCA lesion
0=LCCA not involved, 1=LCCA involved.
CB - RICA lesion
0=RICA not involved, 1=RICA involved.
CC - LICA lesion
0=LICA not involved, 1=LICA involved.
CD - Cor Art lesion
0=CA not involved, 1=CA involved.
CE - Pulm Art lesion
0=PA not involved, 1=PA involved.
CF - Celiac Art lesion
0=CA not involved, 1=CA involved.
CG - SMA lesion
0=SMA not involved, 1=SMA involved.
CH - IMA lesion
0=IMA not involved, 1=IMA involved
CI - RRA lesion
0=RRA not involved, 1=RRA involved
CJ - LRA lesion
0=LRA not involved, 1=LRA involved
CK - Bilat. RA lesion
0=Bilat RA not involved, 1=Bilat RA involved
CL - Iliac lesion
0=Iliac not involved, 1=Iliac involved
CM - CFA lesion
0=CFA not involved, 1=CFA involved
CN - SFA lesion
0=SFA not involved, 1=SFA involved
CO – Clinical criteria C +
0= Cor. Artery not involved , 1= Cor. Artery involved
CP - Clinical criteria P +
0= Pulm. Artery not involved , 1= Pulm. Artery involved

CQ - Disease activity on first visit

1=Active, 2=Smouldering, 3=Inactive.

CR - Disease activity on last follow-up visit
1=Active, 2=Smouldering, 3=Inactive.

CS – Type of Takayasu arteritis
1/2/3/4/5.

CT - Response of medical treatment
1=Good, 2=Satisfactory, 3=Poor.

CU - Response of interventional treatment
1=Good, 2=Satisfactory, 3=Poor.

MASTER CHART

CaseNo	Pt. Name	Hosp. No.	Age	Sex M-1F-2	B.M.I	Typeof T.A.	Year of onset of symptom	Symp_status	C_Symp_None	C.Symp_Fatigue
1	Pratyusa Mukherjee	544503C	56	2	24	2	1,985	1	0	1
2	Pakhi Haldar	070891F	17	2	16	3	2,010	1	0	1
3	Prince Tonk	534019D	22	1	17	5	2,010	1	0	0
4	Paramjeet Gupta	716317C	35	2	18	1	2,006	1	0	0
5	Rebecca Chalianmawii	965256D	25	2	27	1	2,010	1	0	1
6	Ridalin Gatphoh	129862B	36	2	22	5	1,997	1	0	1
7	Shivarajeshwari	972401D	26	2	20	1	2,011	1	1	0
8	Kumari Nag	752827c	24	2	26	5	2,005	1	0	1
9	Shashi Bala Sinha	598362D	63	2	35	5	2,009	1	0	1
10	Pinki Das Karmakar	309437D	29	2	27	5	2,008	1	1	0
11	Amit Kumar	176547D	26	1	19	2	2,007	1	0	1
12	Chitrakala	714166C	23	2	18	3	2,005	1	0	0
13	Nisha Marbaniang	090984F	36	2	25	5	2,011	1	0	1
14	Anamika Devi	078354F	34	2	28	5	2,003	1	0	1
15	Jesela Ali	071377F	32	2	26	1	2,005	1	1	0
16	Mohammed Kasim.M	095392F	37	1	27	5	2,011	1	0	0
17	Shalini Guha	019378F	15	2	27	5	2,010	1	0	1
18	Metali Goswami	948963D	32	2	19	1	2,003	1	0	1
19	Triptikana De	952223B	37	2	25	3	2,000	1	1	0
20	Bula Bose	324736D	37	2	33	4	1,990	1	0	1
21	Soma Mondal	070910F	29	2	27	4	2,000	1	0	1
22	Anna Rani Basak	072918F	20	2	17	5	2,010	1	0	1
23	Hridya Roy	876074D	14	1	21	4	2,009	1	0	1
24	Sikha Das	115596D	44	2	30	1	2,007	1	1	0
25	Swapna Samadar	668220C	50	2	17	5	1,998	1	0	0
26	Sonali Chakraborty	596696D	50	2	31	1	2,007	1	1	0
27	Anita	059454D	26	2	21	5	2,007	1	0	1
28	Kanika Jana	976278D	51	2	18	5	1,990	1	0	1
29	Faruk Molla	407093D	14	1	17	4	2,009	1	0	1
30	Janani G.	978164D	12	2	14	2	2,011	1	0	1
31	Chitra Maya Powdyel	269071D	19	2	19	5	2,008	1	0	1
32	Sadha Mary	700459B	41	2	25	1	2,001	1	0	1
33	Evangeline.L.Nongbri	823414D	29	2	21	5	2,008	1	0	1
34	Narayan Pandit	043509F	30	1	17	1	2,004	1	0	0
35	Strongwel Mawkhling	750888D	61	1	19	5	2,005	1	0	0
36	Tinku Ghosh	055039F	22	2	16	5	2,006	1	1	0
37	Sunil Kumar Shaw	832069D	23	1	23	5	2,010	1	1	0
38	Sangita Ghosh	772261D	24	2	25	5	2,010	1	0	1
39	Shikaka Paul	438799C	45	2	25	2	2,003	1	0	1
40	Poonam Lata	794982C	24	2	23	5	2,005	1	1	0
41	Macha Lavania	010116F	23	2	21	1	2,010	1	1	0
42	Dullu Haldar	000722F	38	2	21	5	1,990	0	1	0

MASTER CHART

CaseNo	Pt. Name	Hosp. No.	Age	Sex M-1F-2	B.M.I	Typeof T.A.	Year of onset of symptom	Symp_status	C_Symp_None	C.Symp_Fatigue
43	Mafuz Begum	041930F	38	2	27	5	2,008	1	0	1
44	Praveen Kumar	959878D	29	1	26	1	2,008	1	1	0
45	Parinita Porel	931349B	24	2	17	4	1,998	1	0	1
46	Sarveriyar K	938279D	21	1	21	5	2,009	1	1	0
47	Sushil Kumar	611978D	47	1	23	5	2,006	1	1	0
48	Chandrakala R.	004090F	25	2	28	5	2,010	1	1	0
49	Saraswati Gorai	953058d	33	2	20	1	2,009	1	0	1
50	Sova Bardhan	005098F	53	2	23	1	2,007	1	0	0
51	Juli Laskar	995329D	16	2	18	3	2,010	1	0	1
52	Bijon Mondal	023705F	45	1	22	5	2,006	1	0	0
53	Geetha R.	809433D	30	2	23	1	2,009	1	0	1
54	Saba Naz	606088D	12	2	16	5	2,009	1	1	0
55	Amina Bibi	006972F	21	2	22	3	2,009	1	0	1
56	Ashok kumar Pramanik	789627D	47	1	19	5	2,005	1	0	0
57	Santi Majumder	782923D	59	1	21	3	2,007	1	0	1
58	Sagar Chandra Mondal	862417D	42	1	24	4	2,008	0	1	0
59	Sivarajeswari	972401D	26	2	18	1	2,011	1	1	0
60	Kalaivani K.	718214D	39	2	33	1	2,009	1	1	0
61	Kusum lata Prasad	366269D	64	2	27	5	2,002	1	0	1
62	Sherab choden	720845D	24	1	18	4	2,009	1	0	0
63	Sheli Benerjee	958128D	37	2	22	5	2,002	1	0	1
64	Arpita Ash	760627D	16	2	15	5	2,005	1	0	1
65	Nipa Brahama	885661d	25	2	23	5	2,010	1	1	0
66	Nita Devi	931317D	21	2	22	5	2,009	1	0	1
67	Naga Bhagyasree N	854108D	21	2	18	5	2,009	1	1	0
68	Lynda Pertin	056879D	20	2	24	2	2,007	1	1	0
69	Baby Sarkar	693809c	40	2	23	3	2,005	1	0	0
70	Lekhi Choten	927204D	20	2	18	5	2,007	1	0	1
71	Kaveri Sundarajan	966143D	27	2	18	3	2,008	1	1	0
72	Mutharacha Gopi	731577C	45	2	22	5	2,002	1	1	0
73	Subaja R.	747763D	26	2	41	2	2,009	1	0	1
74	Rupchand Mondal	668159C	35	1	18	5	2,006	1	0	0
75	Molina Dey	996793D	44	2	25	1	2,001	1	0	1
76	Parabati Sah	081549D	39	2	26	1	2,007	1	0	1
77	Mutharacha Gopi	731577C	46	2	22	5	2,005	1	1	0
78	Ratna Diwan	813365C	42	2	26	1	2,006	1	0	1
79	Leki Chotten	927204D	21	2	18	5	2,008	1	0	1
80	Sanjay Lhamo	926356D	16	2	20	3	2,009	1	0	1
81	Revathy M.	200259D	25	2	28	4	2,011	1	1	0
82	Rama Jaiswal	507404C	29	2	22	3	2,002	1	0	1
83	Suganthi K	109356C	45	1	15	4	2,012	1	1	0
84	Jeevanandam A	236812D	40	2	20	1	1,999	1	1	0

MASTER CHART

CaseNo	Pt. Name	Hosp. No.	Age	Sex M-1F-2	B.M.I	Typeof T.A.	Year of onset of symptom	Symp_status	C_Symp_None	C.Symp_Fatigue
85	Ranjit Saha	121901F	47	1	15	3	2,012	1	1	0
86	Pushparani E	062763F	30	2	23	1	2,010	1	0	0
87	Lalita Danapat	129260B	45	2	24	3	1,992	1	1	0
88	Dr malooqa	141597F	38	2	31	1	2,006	1	0	0
89	Pratima Khamaru	135293D	47	2	30	5	2,006	1	0	1
90	Dr. N S Thakur	058928F	46	1	26	1	2,005	1	1	0
91	Santa Biswas	100314F	31	2	21	1	2,009	1	0	1
92	Chandra Sivakumari	138770F	22	2	22	5	2,009	1	0	1
93	Valentina D	862061D	46	2	20	5	2,002	1	0	1
94	Suganya M.	232578F	23	2	21	1	2,010	1	0	1
95	Hyfa B.V.	728891D	21	2	19	5	2,009	1	0	1
96	Soma Bhowmik	498876B	39	2	23	2	1,996	1	0	1
97	Sangeeta Srivastava	139842F	42	2	29	1	2,009	1	0	1
98	Manti Deb	905341D	27	2	23	4	2,007	1	1	0
99	Babli Kumari	217349F	15	2		5	2,011	1	1	0
100	Jagtapati Dutta	884494C	56	1	26	5	2,003	1	1	0
101	Vasanta T.	615525D	34	2	30	5	2,004	1	0	1
102	Santosh Kumar	930583C	19	1	17	2	2,005	1	0	1
103	Mohammed Mubarak M.	162096F	7	1		1	2,011	1	0	0
104	Jainab Asif	175625F	22	2		5	2,010	1	0	0
105	Sharmishtha Roy	192149F	18	2	18	2	2,009	1	0	0
106	Naga Bhavani	176430D	13	2	27	3	2,007	1	0	1
107	Rama Devi R.	147104F	38	2	29	1	1,998	1	0	1
108	Nayan Dey	115862C	27	1	16	5	2,001	1	0	1
109	Eswaran M B	021211F	42	1	27	5	2,009	1	1	0
110	Kum Kum Kumari	168800F	24	2	16	5	2,007	1	1	0
111	Vishal Wahlong	227304F	42	1	28	1	2,012	1	0	1
112	HafeezAhemed	229218F	10	1	16	5	2,011	1	1	0
113	Sajana Philip	244712F	33	2	21	3	2,012	1	1	0
114	Saroj Srivastava	293967F	36	2	30	1	2,009	1	0	1
115	Sixty pyrangap	297075F	30	2	22	1	2,008	1	0	1
116	Chaya Kiran	538698C	19	2	24	5	2,005	1	0	1
117	Sandhya Manda	700646D	31	2	24	1	2,008	1	0	0
118	Maya Prasad	157399F	48	2	28	5	2,011	1	0	1
119	Parvathi K	356449F	30	2	25	4	2,012	1	1	0
120	Anima Olive Khalko	356435F	20	2	19	5	2,012	1	0	1
121	Muni Rika Chmomin	042918f	32	2	20	1	2,011	1	1	0
122	Rama Das Gupta	069847C	32	2	25	5	2,001	1	1	0
123	Kavitha A	106232F	31	2	25	1	2,011	1	1	0
124	Sarita Devi	151458F	31	2	25	1	2,008	1	0	0
125	Sidharth Shah	020873F	31	1	24	3	2,010	1	0	0

MASTER CHART

CaseNo	C.Symp_Fever	C.Symp_Wt.Loss	C.Symp_Myalgia	C.Symp_Arthralgia	H.RelatedSymp_none	H.Related_E Dysnoea	H.Relatd_PND
1	0	0	0	1	0	1	0
2	0	1	0	0	0	1	0
3	0	0	0	0	0	1	0
4	0	1	0	0	1	0	0
5	0	0	1	0	0	1	0
6	0	1	1	0	1	0	0
7	0	0	0	0	0	1	0
8	0	0	0	0	0	1	0
9	0	0	1	0	0	1	0
10	0	0	0	0	1	0	0
11	1	1	0	0	1	0	0
12	1	0	1	1	0	1	0
13	0	0	1	0	0	1	0
14	1	0	0	0	0	1	1
15	0	0	0	0	1	0	0
16	0	0	1	0	1	0	0
17	1	1	1	0	0	0	0
18	0	0	0	0	1	0	0
19	0	0	0	0	1	0	0
20	0	0	0	0	0	1	0
21	0	0	0	0	0	1	0
22	0	0	0	0	0	1	0
23	0	0	0	0	1	0	0
24	0	0	0	0	0	1	0
25	0	1	0	1	0	1	0
26	0	0	0	0	0	1	0
27	1	1	1	0	0	1	0
28	0	1	0	0	1	0	0
29	0	0	0	0	1	0	0
30	0	0	0	0	0	1	0
31	1	1	1	0	0	1	0
32	0	1	1	1	0	1	0
33	0	0	0	0	0	0	0
34	0	1	0	0	1	0	0
35	0	1	0	0	1	0	0
36	0	0	0	0	0	1	0
37	0	0	0	0	0	1	0
38	1	1	0	0	1	0	0
39	0	0	1	1	0	1	0
40	0	0	0	0	1	0	0
41	0	0	0	0	1	0	0
42	0	0	0	0	1	0	0

MASTER CHART

CaseNo	C.Symp_Fever	C.Symp_Wt.Loss	C.Symp_Myalgia	C.Symp_Arthralgia	H.RelatedSymp_none	H.Related_E Dysnoea	H.Relatd_PND
43	0	0	0	1	0	1	0
44	0	0	0	0	1	0	0
45	1	0	1	1	0	1	1
46	0	0	0	0	1	0	0
47	0	0	0	0	0	1	0
48	0	0	0	0	1	0	0
49	0	0	0	1	0	1	0
50	0	1	0	0	0	0	0
51	0	1	0	0	1	0	0
52	0	1	0	0	0	1	0
53	0	0	1	0	0	1	0
54	0	0	0	0	0	1	0
55	0	0	0	0	0	1	0
56	0	0	1	0	0	0	0
57	0	0	0	0	0	1	0
58	0	0	0	0	1	0	0
59	0	0	0	0	0	1	0
60	0	0	0	0	0	1	1
61	0	1	0	0	0	0	0
62	0	0	0	0	1	0	0
63	0	0	1	1	1	0	0
64	0	0	0	0	1	0	0
65	0	0	0	0	1	0	0
66	0	0	0	0	0	0	0
67	0	0	0	0	0	0	0
68	0	0	0	0	1	0	0
69	0	0	0	1	1	0	0
70	0	0	0	0	0	1	0
71	0	0	0	0	1	0	0
72	0	0	0	0	1	0	0
73	0	0	0	0	0	1	0
74	0	1	0	0	1	0	0
75	0	0	1	0	0	1	0
76	0	0	0	0	0	1	0
77	0	0	0	0	1	0	0
78	0	0	1	0	1	0	0
79	0	0	0	0	0	1	0
80	1	1	0	0	0	1	0
81	0	0	0	0	1	0	0
82	0	0	0	1	0	1	0
83	0	0	0	0	0	1	0
84	0	0	0	0	1	0	0

MASTER CHART

CaseNo	C.Symp_Fever	C.Symp_Wt.Loss	C.Symp_Myalgia	C.Symp_Arthralgia	H.RelatedSymp_none	H.Related_E Dysnoea	H.Relatd_PND
85	0	0	0	0	0	1	0
86	0	0	0	1	0	1	0
87	0	0	0	0	1	0	0
88	0	0	1	0	0	0	0
89	0	0	0	0	1	0	0
90	0	0	0	0	1	0	0
91	0	0	0	0	1	0	0
92	1	0	0	1	1	0	0
93	1	0	0	0	0	1	0
94	0	0	0	1	1	0	0
95	0	0	0	0	1	0	0
96	0	0	0	0	0	1	0
97	0	0	0	0	1	0	0
98	0	0	0	0	1	0	0
99	0	0	0	0	1	0	0
100	0	0	0	0	0	0	0
101	0	0	0	1	1	0	0
102	0	1	0	0	1	0	0
103	1	1	0	0	0	1	0
104	1	1	0	0	1	1	0
105	1	0	1	0	0	1	0
106	1	0	0	0	0	1	0
107	0	0	1	0	1	0	0
108	0	1	0	0	1	0	0
109	0	0	0	0	1	1	0
110	0	0	0	0	0	1	0
111	0	0	0	0	1	0	0
112	0	0	0	0	1	0	0
113	0	0	0	0	1	0	0
114	0	0	1	0	1	0	0
115	0	0	0	1	1	0	0
116	0	0	0	1	0	1	0
117	0	0	1	1	1	0	0
118	0	0	1	0	0	1	0
119	0	0	0	0	0	1	0
120	1	0	0	0	0	1	0
121	0	0	0	0	1	0	0
122	0	0	0	0	1	0	0
123	0	0	0	0	1	0	0
124	0	0	0	1	1	0	0
125	1	0	0	0	1	0	0

MASTER CHART

CaseNo	H.Related_Orthopnea	H.Reltemad_Pedal edema	H.Related_Angina	H.Related_Palpitation	Neurological_None	Neurological_Giddiness
1	0	0	0	0	0	1
2	0	0	0	1	1	0
3	0	0	0	0	1	0
4	0	0	0	0	0	1
5	0	1	0	0	0	0
6	0	0	0	0	0	1
7	0	0	1	0	0	1
8	0	0	0	0	0	0
9	0	1	0	0	0	0
10	0	0	0	0	0	1
11	0	0	0	0	1	0
12	0	0	0	0	0	1
13	0	0	0	0	0	1
14	0	1	0	0	1	0
15	0	0	0	0	1	0
16	0	0	0	0	1	0
17	0	0	0	1	1	0
18	0	0	0	0	0	1
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	1
23	0	0	0	0	0	1
24	0	0	0	0	0	1
25	0	0	1	0	0	0
26	0	0	1	0	0	0
27	0	1	0	0	0	1
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	1	0
31	0	0	1	1	0	1
32	1	0	1	1	0	1
33	0	0	0	1	0	1
34	0	0	0	0	1	0
35	0	0	0	0	0	1
36	0	0	1	1	1	0
37	0	0	0	0	1	0
38	0	0	0	0	0	1
39	0	0	1	0	1	0
40	0	0	0	0	0	0
41	0	0	0	0	0	1
42	0	0	0	0	0	0

MASTER CHART

CaseNo	H.Related_Orthopnea	H.Reltemad_Pedal edema	H.Related_Angina	H.Related_Palpitation	Neurological_None	Neurological_Giddiness
43	0	0	1	0	0	1
44	0	0	0	0	0	0
45	1	0	0	0	1	0
46	0	0	0	0	0	0
47	0	0	0	0	0	0
48	0	0	0	0	1	0
49	0	1	0	0	0	1
50	0	1	0	0	1	0
51	0	0	0	0	0	1
52	1	0	0	1	0	1
53	0	0	0	0	0	1
54	0	0	0	0	0	0
55	0	0	0	0	0	1
56	0	0	0	1	0	1
57	0	0	0	0	1	0
58	0	0	0	0	1	0
59	0	0	1	1	0	0
60	0	1	0	0	0	0
61	0	0	0	1	0	1
62	0	0	0	0	1	0
63	0	0	0	0	1	0
64	0	0	0	0	1	0
65	0	0	0	0	1	0
66	0	0	0	1	1	0
67	0	0	0	1	1	0
68	0	0	0	0	1	0
69	0	0	0	0	1	0
70	0	0	0	1	1	0
71	0	0	0	0	0	1
72	0	0	0	0	0	0
73	0	0	0	0	0	1
74	0	0	0	0	0	1
75	0	1	0	0	0	1
76	0	0	0	1	0	1
77	0	0	0	0	0	0
78	0	0	0	0	0	1
79	0	0	0	1	1	0
80	0	0	0	1	0	1
81	0	0	0	0	1	0
82	0	0	0	1	0	1
83	0	0	0	0	1	0
84	0	0	0	0	1	0

MASTER CHART

CaseNo	H.Related_Orthopnea	H.Reltemad_Pedal edema	H.Related_Angina	H.Related_Palpitation	Neurological_None	Neurological_Giddiness
85	0	0	0	0	1	0
86	0	0	0	1	1	0
87	0	0	0	0	0	0
88	0	0	0	0	1	0
89	0	0	0	0	0	0
90	0	0	0	0	0	1
91	0	0	0	0	0	0
92	0	0	0	0	1	0
93	0	0	1	1	0	1
94	0	0	0	1	1	1
95	0	0	0	0	0	0
96	0	0	0	1	1	0
97	0	0	0	0	1	0
98	0	0	0	0	1	0
99	0	0	0	0	0	1
100	0	0	1	1	0	0
101	0	0	0	0	1	0
102	0	0	0	0	1	0
103	0	0	0	0	1	0
104	0	0	0	0	0	0
105	0	0	1	0	0	1
106	1	0	0	0	1	0
107	0	0	0	0	1	0
108	0	0	0	0	0	1
109	0	0	0	0	1	0
110	0	0	0	0	0	0
111	0	0	0	0	1	0
112	0	0	0	0	0	0
113	0	0	0	0	0	1
114	0	0	0	0	0	0
115	0	0	0	0	0	1
116	1	0	0	0	1	0
117	0	0	0	0	1	0
118	0	0	1	0	0	1
119	0	0	0	0	1	0
120	0	0	0	0	1	0
121	0	0	0	0	1	0
122	0	0	0	0	1	0
123	0	0	0	0	0	0
124	0	0	0	0	1	0
125	0	0	0	0	1	0

MASTER CHART

CaseNo	Neurological_Syncope	Neurological_TIA	Neurological_Stroke	Neurological_Blurredvision	Neurological_Neckpain	Neurological_Seizure
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	1	0	1	0	0	0
5	0	0	0	0	1	0
6	0	0	0	1	1	0
7	0	0	1	1	0	0
8	0	0	0	1	0	0
9	1	0	0	0	0	0
10	1	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	1	0
13	1	0	1	1	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	1	0	0	1	0	0
19	0	0	0	1	0	0
20	0	0	0	0	1	0
21	0	0	0	1	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	1	0	0	1	1	0
26	1	0	0	1	0	0
27	1	0	0	0	0	1
28	0	0	0	0	0	1
29	1	0	0	1	0	1
30	0	0	0	0	0	0
31	0	0	0	0	1	0
32	1	0	0	0	0	0
33	1	0	0	0	0	0
34	0	0	0	0	0	0
35	0	0	0	1	0	0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	1	0
39	0	0	0	0	0	0
40	0	0	0	0	1	0
41	1	0	0	0	0	0
42	0	0	1	0	0	0

MASTER CHART

CaseNo	Neurological_Syncope	Neurological_TIA	Neurological_Stroke	Neurological_Blurredvision	Neurological_Neckpain	Neurological_Seizure
43	0	0	0	1	0	0
44	0	0	1	1	1	0
45	0	0	0	0	0	0
46	0	0	0	0	1	0
47	0	0	1	0	0	0
48	0	0	0	0	0	0
49	1	0	0	0	0	0
50	0	0	0	0	0	0
51	0	0	0	1	0	0
52	0	0	1	0	0	0
53	0	0	0	0	0	0
54	0	1	0	0	0	0
55	0	0	0	0	0	0
56	0	0	0	1	0	0
57	0	0	0	0	0	0
58	0	0	0	0	0	0
59	0	0	1	0	1	0
60	0	0	1	0	0	1
61	1	0	0	1	1	0
62	0	0	0	0	0	0
63	0	0	0	0	0	0
64	0	0	0	0	0	0
65	0	0	0	0	0	0
66	0	0	0	0	0	0
67	0	0	1	0	0	0
68	0	0	0	0	0	0
69	0	0	0	0	0	0
70	0	0	0	0	0	0
71	0	0	0	1	0	0
72	0	0	0	0	1	0
73	0	0	0	0	0	0
74	1	0	0	0	0	0
75	1	0	0	0	0	0
76	0	0	0	1	1	0
77	0	0	0	0	1	1
78	1	0	0	0	1	0
79	0	0	0	0	0	0
80	1	0	0	0	0	0
81	0	0	0	0	0	0
82	0	0	0	0	0	0
83	0	0	0	0	0	0
84	0	0	0	0	0	0

MASTER CHART

CaseNo	Neurological_Syncope	Neurological_TIA	Neurological_Stroke	Neurological_Blurredvision	Neurological_Neckpain	Neurological_Seizure
85	0	0	0	0	0	0
86	0	0	0	0	0	0
87	0	0	0	1	0	0
88	0	0	0	0	0	0
89	0	0	0	0	1	0
90	0	0	0	1	0	0
91	0	0	1	1	0	0
92	0	0	0	0	0	0
93	0	0	0	0	0	0
94	1	0	0	0	0	0
95	1	1	0	1	1	0
96	0	0	0	0	0	0
97	0	0	0	0	0	0
98	0	0	0	0	0	0
99	1	0	1	1	0	1
100	1	0	0	0	0	0
101	0	0	0	0	0	0
102	0	0	0	0	0	0
103	0	0	0	0	0	0
104	0	0	1	0	1	0
105	0	0	0	0	0	0
106	0	0	0	0	0	0
107	0	0	0	0	0	0
108	0	0	0	0	0	0
109	0	0	0	0	0	0
110	0	0	1	0	0	0
111	0	0	0	0	0	0
112	0	0	0	0	0	1
113	0	0	0	0	0	0
114	1	0	0	1	0	0
115	1	1	1	1	1	1
116	0	0	0	0	0	0
117	0	0	0	0	0	0
118	1	0	0	1	0	0
119	0	0	0	0	0	0
120	0	0	0	0	0	0
121	0	0	0	0	0	0
122	0	0	0	0	0	0
123	0	0	1	0	0	0
124	0	0	0	0	0	0
125	0	0	0	0	0	0

MASTER CHART

CaseNo	Mesenteric_Post Abd pain	Mesenteric_Anorexia	Mesenteric_Wtloss	Renal_None	Renal_HTN	Renal_Renalfailure	U.L._None	U.L._RULF
1	0	1	0	0	1	0	0	0
2	0	0	1	0	1	0	0	0
3	0	0	0	0	1	0	0	1
4	0	1	1	1	0	0	1	0
5	1	0	0	1	0	0	0	0
6	0	0	0	1	0	0	0	0
7	0	0	0	1	0	0	0	0
8	0	0	0	0	1	0	0	0
9	0	0	0	1	0	0	0	0
10	0	0	0	0	1	0	0	0
11	0	0	0	0	1	0	0	0
12	0	0	0	0	1	0	1	0
13	0	0	0	1	0	0	0	0
14	0	0	0	1	0	0	0	0
15	0	0	0	1	0	0	0	0
16	1	0	0	1	0	0	1	0
17	0	1	1	1	0	0	0	1
18	0	1	0	1	0	0	0	0
19	0	0	0	0	1	0	1	0
20	0	0	0	0	1	0	0	0
21	0	0	0	0	1	0	1	0
22	0	0	0	0	1	0	0	0
23	0	0	0	0	1	0	1	0
24	0	0	0	0	1	0	1	0
25	1	0	1	1	0	0	0	0
26	0	0	0	1	0	0	0	0
27	0	0	1	1	0	0	0	0
28	0	0	1	1	0	0	1	0
29	0	0	0	0	1	0	1	0
30	0	0	0	0	1	1	1	0
31	0	0	0	1	0	0	0	1
32	0	1	1	1	0	0	0	1
33	0	0	0	0	1	0	0	1
34	0	0	0	1	0	0	0	1
35	0	1	1	0	1	0	1	0
36	0	0	0	0	1	0	1	0
37	0	0	0	0	1	0	0	0
38	0	0	0	1	0	0	0	0
39	0	0	0	0	1	0	1	0
40	0	0	0	0	1	0	0	0
41	0	0	0	0	1	0	1	0
42	0	0	0	0	1	0	1	0

MASTER CHART

CaseNo	Mesenteric_Post Abd pain	Mesenteric_Anorexia	Mesenteric_Wtloss	Renal_None	Renal_HTN	Renal_Renalfailure	U.L._None	U.L._RULF
43	0	0	0	1	0	0	0	1
44	0	0	0	1	0	0	1	0
45	0	1	0	0	1	0	1	0
46	0	0	0	0	0	0	1	0
47	0	0	0	0	1	0	1	0
48	0	0	0	0	1	0	1	0
49	0	0	0	1	0	0	0	0
50	0	0	0	0	1	0	0	1
51	1	1	0	0	1	0	1	0
52	0	1	0	1	0	0	0	0
53	0	0	0	1	0	0	0	1
54	1	0	0	1	0	0	0	0
55	0	0	0	0	1	0	1	0
56	0	0	0	0	1	0	0	1
57	0	0	0	0	1	0	1	0
58	0	0	0	0	1	0	1	0
59	0	0	0	0	1	0	0	0
60	0	0	0	0	1	0	0	0
61	1	0	0	0	1	0	0	0
62	0	0	0	0	1	0	1	0
63	0	0	0	0	1	0	1	0
64	0	0	0	0	1	0	0	0
65	0	0	0	0	1	0	1	0
66	0	0	0	0	1	0	0	0
67	0	0	0	0	1	0	1	0
68	0	0	0	0	1	0	1	0
69	0	0	0	0	1	0	1	0
70	0	0	0	0	1	0	1	0
71	0	0	0	0	1	0	1	0
72	0	0	0	0	1	0	0	0
73	0	0	0	0	1	0	0	0
74	0	0	1	0	1	1	0	0
75	0	0	0	0	1	0	0	0
76	0	0	0	0	0	0	0	0
77	0	0	0	0	1	0	0	0
78	0	0	0	1	0	0	1	0
79	0	0	0	0	1	0	1	0
80	0	0	1	1	0	0	0	0
81	0	0	0	0	1	0	1	0
82	1	0	0	0	1	0	0	0
83	0	0	0	0	1	0	1	0
84	0	0	0	0	1	0	0	1

MASTER CHART

CaseNo	Mesenteric_Post Abd pain	Mesenteric_Anorexia	Mesenteric_Wtloss	Renal_None	Renal_HTN	Renal_Renalfailure	U.L._None	U.L._RULF
85	0	0	0	0	1	0	1	0
86	0	0	0	0	0	0	0	0
87	0	0	0	0	1	0	0	1
88	0	0	0	1	0	0	0	0
89	0	0	0	0	1	0	0	0
90	0	0	0	1	0	0	0	0
91	0	0	0	0	1	0	1	0
92	0	0	0	1	0	0	0	0
93	1	0	0	1	0	0	0	0
94	0	0	0	1	0	0	0	0
95	0	0	0	1	0	0	0	1
96	0	0	0	0	1	0	0	0
97	0	0	0	0	0	0	0	0
98	0	0	0	0	1	0	1	0
99	0	0	0	0	1	0	1	0
100	1	0	0	1	1	0	1	0
101	0	0	0	0	1	0	0	0
102	0	0	0	0	0	1	1	0
103	0	0	0	0	0	0	1	0
104	0	0	0	0	1	0	0	0
105	0	0	0	1	0	0	1	0
106	0	0	0	0	1	0	1	0
107	0	0	0	1	0	0	0	0
108	0	0	0	1	0	0	1	0
109	0	0	0	0	1	0	0	0
110	0	0	0	0	1	0	0	0
111	0	0	0	1	0	0	0	0
112	0	0	0	0	1	0	1	0
113	0	0	0	0	1	0	1	0
114	0	0	0	1	0	0	0	0
115	0	0	0	1	0	0	0	1
116	0	0	0	1	1	0	1	0
117	0	0	0	1	0	0	0	0
118	1	1	0	0	0	0	0	0
119	0	0	0	0	1	0	1	0
120	0	0	0	0	1	0	1	0
121	0	0	0	1	0	0	0	1
122	0	0	0	0	1	0	0	1
123	0	0	0	1	0	0	1	0
124	0	0	0	1	0	0	0	0
125	0	0	0	1	1	0	1	0

MASTER CHART

CaseNo	U.L._RULC	CaseNo	U.L._LULF	U.L._LULC	UL_BULF	U.L._BULC	L.L._None	L.L._RLLF	LL_RLLC	LL_LLLF	LL_LLLC	LL_BLLF	LL_BLLC
1	0	1	0	0	1	1	1	0	0	0	0	0	0
2	0	2	0	0	1	1	1	0	0	0	0	0	0
3	1	3	0	0	0	0	0	1	1	0	0	0	0
4	0	4	0	0	0	0	1	0	0	0	0	0	0
5	0	5	1	1	0	0	1	0	0	0	0	0	0
6	0	6	0	0	1	1	1	0	0	0	0	0	0
7	0	7	1	1	0	0	1	0	0	0	0	0	0
8	0	8	1	1	0	0	0	0	0	0	0	1	1
9	0	9	0	0	1	1	1	0	0	0	0	0	0
10	0	10	1	1	0	0	1	0	0	0	0	0	0
11	0	11	1	1	0	0	0	0	0	0	0	0	0
12	0	12	0	0	0	0	0	0	0	0	0	1	1
13	0	13	1	1	0	0	1	0	0	0	0	0	0
14	0	14	1	1	0	0	1	0	0	0	0	0	0
15	0	15	0	0	1	1	1	0	0	0	0	0	0
16	0	16	0	0	0	0	0	0	0	0	1	1	1
17	1	17	0	0	0	0	1	0	0	0	0	0	0
18	0	18	0	0	1	0	0	1	0	0	0	0	0
19	0	19	0	0	0	0	1	0	0	0	0	0	0
20	0	20	0	0	0	1	0	0	0	0	0	1	1
21	0	21	0	0	0	0	1	0	0	0	0	0	0
22	0	22	1	1	0	0	0	0	0	0	0	1	1
23	0	23	0	0	0	0	0	0	0	0	0	0	1
24	0	24	0	0	0	0	0	0	0	0	0	1	1
25	0	25	0	0	1	1	1	0	0	0	0	0	0
26	0	26	1	1	0	0	0	0	0	1	1	0	0
27	0	27	0	0	1	1	1	0	0	0	0	0	0
28	0	28	0	0	0	0	1	0	0	0	0	0	0
29	0	29	0	0	0	0	1	0	0	0	0	0	0
30	0	30	0	0	0	0	0	1	1	1	1	0	0
31	1	31	0	0	0	0	0	0	0	0	0	1	1
32	1	32	1	1	0	0	0	0	0	1	1	0	0
33	1	33	0	0	0	0	1	0	0	0	0	0	0
34	1	34	0	0	0	0	1	0	0	0	0	0	0
35	0	35	0	0	0	0	1	0	0	0	0	0	0
36	0	36	0	0	0	0	0	0	0	0	0	1	1
37	0	37	1	1	0	0	1	0	0	0	0	0	0
38	0	38	0	0	1	1	1	0	0	0	0	0	0
39	0	39	0	0	0	0	0	0	0	0	0	1	1
40	0	40	1	1	0	0	0	0	0	1	1	0	0
41	0	41	0	0	0	0	1	0	0	0	0	0	0
42	0	42	0	0	0	0	1	0	0	0	0	0	0

MASTER CHART

CaseNo	U.L._RULC	CaseNo	U.L._LULF	U.L._LULC	UL_BULF	U.L._BULC	L.L._None	L.L._RLLF	LL_RLLC	LL_LLLF	LL_LLLC	LL_BLLF	LL_BLLC
43	1	43	0	0	0	0	0	1	1	0	0	0	0
44	0	44	0	0	0	0	1	0	0	0	0	0	0
45	0	45	0	0	0	0	0	0	0	0	0	1	1
46	0	46	0	0	0	0	1	0	0	0	0	0	0
47	0	47	0	0	0	0	0	0	0	0	0	1	1
48	0	48	0	0	0	0	1	0	0	0	0	0	0
49	0	49	0	1	0	0	0	0	0	0	0	0	1
50	1	50	0	0	0	0	0	0	0	0	0	1	1
51	0	51	0	0	0	0	0	0	1	0	0	0	0
52	0	52	0	0	1	0	0	0	0	0	0	1	1
53	1	53	0	0	0	0	1	0	0	0	0	0	0
54	0	54	0	0	1	0	1	0	0	0	0	0	0
55	0	55	0	0	0	0	1	0	0	0	0	0	0
56	1	56	0	0	0	0	0	0	0	0	0	1	1
57	0	57	0	0	0	0	0	0	0	0	0	0	0
58	0	58	0	0	0	0	1	0	0	0	0	0	0
59	0	59	1	1	0	0	1	0	0	0	0	0	0
60	0	60	0	0	1	1	1	0	0	0	0	0	0
61	0	61	1	1	0	0	1	0	0	0	0	0	0
62	0	62	0	0	0	0	1	0	0	0	0	0	0
63	0	63	0	0	0	0	0	0	0	0	0	1	1
64	0	64	0	0	0	1	0	0	0	0	0	0	1
65	0	65	0	0	0	0	1	0	0	0	0	0	0
66	0	66	1	1	0	0	1	0	0	0	0	0	0
67	0	67	0	0	0	0	0	0	0	0	0	1	1
68	0	68	0	0	0	0	1	0	0	0	0	0	0
69	0	69	0	0	0	0	1	0	0	0	0	0	0
70	0	70	0	0	0	0	0	1	1	1	1	0	0
71	0	71	0	0	0	0	1	0	0	0	0	0	0
72	0	72	1	1	0	0	1	0	0	0	0	0	0
73	0	73	1	1	0	0	0	0	0	0	0	1	1
74	0	74	0	0	0	0	1	0	0	0	0	0	0
75	1	75	0	1	0	0	1	0	0	0	0	0	0
76	0	76	0	0	1	1	1	1	1	1	1	1	1
77	0	77	1	1	0	0	1	0	0	0	0	0	0
78	0	78	0	0	0	0	1	0	0	0	0	0	0
79	0	79	0	0	0	0	0	0	0	0	0	1	1
80	0	80	0	0	1	1	0	0	0	0	0	1	1
81	0	81	0	0	0	0	1	0	0	0	0	0	0
82	0	82	1	1	0	0	0	0	0	0	0	1	1
83	0	83	0	0	0	0	1	0	0	0	0	0	0
84	1	84	0	0	0	0	1	0	0	0	0	0	0

MASTER CHART

CaseNo	U.L._RULC	CaseNo	U.L._LULF	U.L._LULC	UL_BULF	U.L._BULC	L.L._None	L.L._RLLF	LL_RLLC	LL_LLLF	LL_LLLC	LL_BLLF	LL_BLLC
85	0	85	0	0	0	0	1	0	0	0	0	0	0
86	0	86	0	0	1	1	1	0	0	0	0	0	0
87	1	87	0	0	0	0	1	0	0	0	0	0	0
88	1	88	0	1	0	1	1	0	0	0	0	0	0
89	1	89	0	1	0	0	1	0	0	0	0	0	0
90	0	90	0	0	1	1	1	0	0	0	0	0	0
91	0	91	0	0	0	0	1	0	0	0	0	0	0
92	0	92	0	0	1	1	0	0	0	0	0	0	0
93	0	93	0	0	1	1	0	0	0	0	0	1	1
94	0	94	0	0	0	0	0	0	0	0	0	1	1
95	1	95	0	0	0	0	0	0	0	0	0	0	0
96	0	96	0	0	1	1	0	0	0	0	0	1	1
97	0	97	1	1	0	0	1	0	0	0	0	0	0
98	0	98	0	0	0	0	1	0	0	0	0	0	0
99	0	99	0	0	0	0	1	0	0	0	0	0	0
100	0	100	0	0	0	0	0	0	1	0	0	0	0
101	0	101	0	0	1	1	1	0	0	0	0	0	0
102	0	102	0	0	0	0	0	0	0	0	0	1	1
103	0	103	0	0	0	0	0	0	0	0	0	0	0
104	0	104	0	0	1	1	1	0	0	0	0	0	0
105	0	105	0	0	1	1	1	0	0	0	0	0	0
106	0	106	0	0	0	0	1	0	0	0	0	0	0
107	0	107	0	0	1	1	0	0	0	1	0	1	1
108	0	108	1	1	0	0	1	0	0	0	0	1	1
109	0	109	0	1	0	0	1	0	0	0	0	0	0
110	0	110	0	0	1	1	1	0	0	0	0	0	0
111	0	111	1	1	0	0	1	0	0	0	0	0	0
112	0	112	0	0	0	0	1	0	0	0	0	0	0
113	0	113	0	0	0	0	1	0	0	0	0	0	0
114	0	114	0	0	1	1	1	0	0	0	0	0	0
115	1	115	0	0	0	0	0	0	0	0	0	1	1
116	0	116	0	0	0	0	1	0	0	0	0	0	0
117	0	117	0	0	1	1	1	0	0	0	0	0	0
118	1	118	1	0	0	0	1	0	0	0	0	0	0
119	0	119	0	0	0	0	0	0	0	0	0	1	1
120	0	120	0	0	0	0	1	0	0	0	0	0	0
121	1	121	0	0	0	0	1	0	0	0	0	0	1
122	1	122	0	0	0	0	1	0	0	0	0	0	0
123	0	123	0	0	0	0	1	0	0	0	0	0	0
124	0	124	0	0	1	1	1	0	0	0	0	0	0
125	0	125	0	0	0	0	1	0	0	0	0	0	0

MASTER CHART

CaseNo	Misc_Headache	Misc_Abortion	Misc_TB	Misc_Epist	Diag_MajorCr	Diag._MinorCr	ClinicalCr.Met	ACRCr.Met	TotalScore	ITASScore	ESR
1	1	0	0	0	0	3	1	1	5	11	36
2	1	0	0	0	2	3	1	1	5	15	12
3	0	0	0	0	1	3	1	1	4	8	5
4	1	1	1	1	2	2	1	1	4	9	90
5	0	0	0	0	2	2	1	1	5	9	80
6	1	1	1	1	2	2	1	1	5	10	13
7	1	1	0	0	2	3	1	1	4	13	80
8	1	0	0	0	0	2	1	1	5	10	15
9	0	0	0	0	2	3	1	1	4	5	51
10	1	0	0	0	2	4	1	1	4	5	28
11	0	0	0	0	2	2	1	1	4	4	97
12	1	0	0	0	1	2	1	0	2	4	16
13	0	0	1	0	2	3	1	1	6	11	21
14	0	1	0	0	2	4	1	1	5	13	50
15	0	0	0	0	2	2	1	1	5	5	45
16	0	0	0	0	1	1	0	1	5	4	49
17	0	0	0	0	2	3	1	1	6	11	52
18	1	1	0	0	2	2	1	1	5	10	45
19	1	0	0	0	1	2	1	0	5	3	61
20	1	0	0	0	1	5	1	1	3	7	45
21	0	1	0	0	1	2	1	1	3	6	10
22	0	0	0	0	2	5	1	1	5	13	35
23	0	0	0	0	1	2	1	3	3	7	5
24	0	0	1	0	1	4	1	3	3	9	55
25	1	0	0	1	2	5	1	1	4	9	50
26	1	0	0	1	2	5	1	1	4	12	41
27	1	0	0	0	2	3	1	1	5	11	34
28	0	0	0	0	2	2	1	1	5	11	73
29	1	0	0	0	2	2	1	1	3	7	3
30	0	0	0	0	1	3	1	1	4	8	135
31	1	0	0	0	2	4	1	1	5	11	82
32	0	0	0	1	2	4	1	1	6	17	20
33	0	0	0	0	2	4	1	1	5	5	27
34	0	0	0	0	2	2	1	1	3	3	45
35	0	0	0	0	2	2	1	0	1	2	60
36	0	0	0	0	1	3	1	1	4	5	24
37	0	0	0	0	2	3	1	1	6	9	15
38	0	0	0	0	2	2	1	1	6	6	67
39	0	0	0	1	1	4	1	1	3	6	85
40	0	0	0	1	2	4	1	1	5	5	35
41	1	0	0	0	2	3	1	1	3	4	84
42	0	0	0	0	1	5	1	1	3	4	62

MASTER CHART

CaseNo	Misc_Headache	Misc_Abortion	Misc_TB	Misc_Epist	Diag_MajorCr	Diag._MinorCr	ClinicalCr.Met	ACRCr.Met	TotalScore	ITASScore	ESR
43	1	0	0	0	2	2	1	1	5	4	35
44	0	0	0	0	2	2	1	0	2	5	3
45	1	0	0	0	2	3	1	1	3	14	24
46	1	0	0	0	2	1	1	1	4	3	5
47	0	0	0	0	1	6	1	1	3	8	13
48	0	1	0	0	2	2	1	1	3	3	28
49	0	0	0	0	2	2	1	1	6	7	23
50	0	1	0	0	2	2	1	1	5	9	60
51	1	0	0	0	2	2	1	1	4	7	65
52	0	0	0	0	2	3	1	1	4	11	51
53	0	0	0	0	2	0	1	1	6	5	13
54	0	0	0	0	2	5	1	1	5	12	13
55	1	1	1	0	2	4	1	1	3	6	35
56	1	0	0	0	2	6	1	1	5	9	17
57	0	0	0	0	1	4	1	0	2	5	120
58	0	0	0	0	1	2	1	0	2	10	5
59	1	0	0	0	2	3	1	1	6	11	80
60	0	0	0	0	2	3	1	1	4	11	77
61	1	0	0	0	2	4	1	1	5	11	15
62	1	0	1	0	2	4	1	0	2	10	40
63	0	1	0	0	2	3	1	1	3	14	108
64	1	0	0	0	2	3	1	1	6	18	30
65	0	1	0	0	2	2	1	1	4	7	80
66	0	1	0	0	2	4	1	1	5	6	43
67	1	0	0	0	2	5	1	1	4	10	20
68	0	0	0	0	2	4	1	1	3	9	20
69	0	1	0	0	1	3	1	1	3	5	51
70	0	0	0	0	2	5	1	1	6	8	30
71	1	0	0	0	2	3	1	1	3	5	30
72	1	0	0	0	2	6	1	1	6	5	52
73	1	0	0	0	2	3	1	1	4	10	32
74	1	0	0	0	2	3	1	1	6	13	40
75	0	0	0	0	2	3	1	1	5	11	26
76	1	0	0	0	2	3	1	1	5	15	30
77	1	0	0	0	2	6	1	1	6	9	52
78	0	0	0	0	2	3	1	1	5	5	30
79	0	0	0	0	2	4	1	1	6	7	30
80	1	0	0	0	2	2	1	1	4	8	21
81	1	0	0	0	1	1	0	0	2	3	14
82	1	1	0	0	2	4	1	1	5	1	30
83	0	0	1	0	2	2	1	1	3	3	5
84	0	0	0	0	2	2	1	1	5	6	27

MASTER CHART

CaseNo	Misc_Headache	Misc_Abortion	Misc_TB	Misc_Epist	Diag_MajorCr	Diag._MinorCr	ClinicalCr.Met	ACRCr.Met	TotalScore	ITASScore	ESR
85	0	0	1	0	0	0	0	1	3	2	5
86	0	0	0	0	2	2	1	1	6	1	25
87	0	0	1	0	2	2	1	1	5	5	81
88	0	0	0	0	2	2	1	1	5	4	23
89	1	0	0	0	2	2	1	1	4	4	34
90	0	0	0	0	2	2	1	1	4	4	10
91	0	0	0	0	3	2	1	1	4	5	95
92	0	0	0	0	2	3	1	1	5	4	73
93	0	0	0	0	2	3	1	1	5	4	25
94	1	0	0	0	1	2	1	1	4	12	5
95	1	0	1	1	2	3	1	1	4	5	96
96	0	0	1	0	1	2	1	1	3	3	31
97	1	1	0	0	2	2	1	1	5	3	42
98	1	1	0	0	1	3	1	1	4	3	84
99	1	0	0	0	2	3	1	1	4	13	8
100	1	0	0	0	1	3	1	1	3	5	46
101	0	0	0	0	2	4	1	1	4	5	20
102	0	0	0	0	1	0	0	0	2	3	25
103	0	0	0	0	2	2	1	1	4	9	70
104	1	0	0	0	2	3	1	1	5	7	26
105	1	0	0	0	1	3	1	0	1	4	47
106	0	0	0	0	1	1	0	0	2	6	31
107	0	0	0	0	2	2	1	1	4	9	39
108	1	0	0	0	1	2	1	0	2	2	2
109	0	0	0	0	2	2	1	1	4	4	2
110	0	0	0	0	2	2	1	1	3	3	73
111	0	0	0	0	2	1	1	1	4	4	6
112	1	0	0	0	2	1	1	1	4	3	15
113	1	0	0	0	1	2	1	0	2	2	60
114	1	0	0	0	2	2	1	1	4	4	32
115	1	0	0	0	2	1	1	1	5	4	38
116	0	0	0	0	2	3	1	1	3	4	35
117	0	0	0	0	2	2	1	1	4	3	10
118	1	0	0	0	1	3	1	1	5	11	61
119	0	0	0	0	1	3	1	1	3	6	98
120	1	0	0	0	2	3	1	1	3	5	74
121	1	0	0	0	2	2	1	1	5	6	90
122	0	0	0	0	2	3	1	1	5	7	43
123	0	0	0	0	2	1	1	1	4	6	20
124	0	0	0	0	2	1	1	1	4	5	54
125	1	0	0	0	2	2	1	0	2	3	35

MASTER CHART

CaseNo	ESR_CRP	cIMTRt	cIMTRt Avg.	cIMTLt	cIMTLt avg.	Aorta_Asc	Aorta_Arch	Aorta_Desc	Aorta_Abd	Innominate lesion	CaseNo
1	1.00					0	1	1	0	1	1
2	0.00	.53/.54/.57	0.55	.43/.50/.63	0.52	1	0	1	0	0	2
3	0.00					0	0	0	0	0	3
4	0.00					0	0	0	0	0	4
5	1.00					0	0	0	0	0	5
6	0.00					0	0	1	0	1	6
7	1.00					0	0	0	0	1	7
8	0.00	.51/52/.52	0.52	.58/.56/.56	0.57	0	1	0	0	0	8
9	1.00					0	0	0	0	0	9
10	0.00					1	0	0	0	0	10
11	1.00	1.33/1.26/1.20	1.26	1.26/1.34/1.47	1.36	0	0	1	0	0	11
12	0.00	.53/.63/.50	0.55	.47/.43/.57	0.49	0	0	0	0	0	12
13	0.00					0	0	0	0	0	13
14	1.00					1	0	0	1	0	14
15	0.00					0	0	0	0	0	15
16	1.00					0	0	0	0	1	16
17	0.00					0	0	1	1	0	17
18	1.00					0	0	0	0	0	18
19	0.00	.56/.57/.67	0.60	.47/.67/.57	0.57	0	0	0	0	0	19
20	1.00	.53/.60/.52	0.55	.6/.54/.57	0.57	0	0	1	1	0	20
21	0.00					0	0	0	1	0	21
22	1.00					0	0	1	1	0	22
23	0.00	.47/.65/.54	0.55	.6/.54/.52	0.55	0	0	0	1	0	23
24	0.00					1	0	0	0	0	24
25	0.00					0	1	1	0	1	25
26	1.00					1	0	0	0	0	26
27	0.00					0	0	0	0	0	27
28	0.00	.63/.52/.60	0.58	.47/.50/.60	0.52	0	0	0	1	0	28
29	0.00	.7/.77/.74	0.74	.49/.63/.51	0.54	0	0	0	1	0	29
30	0.00	.72/.61/.60	0.64	.56/.50/.60	0.55	0	0	1	0	0	30
31	1.00					0	0	0	0	0	31
32	0.00					0	0	0	0	0	32
33	0.00					0	0	0	1	0	33
34	1.00					0	1	0	0	0	34
35	1.00					0	0	0	0	0	35
36	0.00	.78/.67/.60	0.68	.54/.67/.56	0.59	0	0	0	1	0	36
37	0.00	.86/1.02/.90	0.93	.90/.73/.80	0.81	1	0	0	1	0	37
38	0.00					0	0	0	0	0	38
39	1.00	.98/.87/.80	0.88	.87/.94/1.03	0.95	0	0	1	0	0	39
40	1.00	.96/1.0/.96	0.97	1.41/1.27/1.26	1.31	0	0	0	1	0	40
41	1.00					1	0	0	0	0	41
42	1.00	.77/.70/.73	0.73	.66/.81/.87	0.78	1	0	1	1	0	42

MASTER CHART

CaseNo	ESR_CRP	cIMTRt	cIMTRt Avg.	cIMTLt	cIMTLt avg.	Aorta_Asc	Aorta_Arch	Aorta_Desc	Aorta_Abd	Innominate lesion	CaseNo
43	0.00	.43/.50//.60	0.51	.51/.52/.57	0.53	0	0	0	0	0	43
44	0.00					0	0	0	0	0	44
45	1.00	.37/.38/.37	0.37	.90/.93/1.13	0.99	0	0	1	0	0	45
46	0.00	.66/.47/.50	0.54	.60/.63/.57	0.60	0	0	0	0	0	46
47	0.00					0	0	1	0	0	47
48	0.00	.46/.74/.57	0.59	.76/.70/.63	0.70	0	0	0	0	0	48
49	1.00	.87/.90/.83	0.87	1.1./1.03/1.06	1.06	1	0	0	0	0	49
50	1.00	.73/.68/.72	0.71	.60/.64/.68	0.64	0	0	0	0	0	50
51	0.00	1.23/.97/1.08	1.09	.93/1.08/.90	0.97	0	0	0	0	0	51
52	0.00					1	0	0	0	0	52
53	0.00	.67/.67/.86	0.73	1.0/1.02/.93	0.98	0	0	0	0	0	53
54	0.00					1	0	1	0	1	54
55	0.00	.50/.47/.44	0.47	.44/.48/.39	0.44	0	0	1	1	0	55
56	0.00					0	0	1	1	0	56
57	1.00	1.34/1.28/1.24	1.29	1.16/1.18/1.18	1.17	0	0	1	1	0	57
58	0.00	,54/.56/.56	0.55	.52/.52/.54	0.53	0	0	0	1	0	58
59	1.00					0	0	0	0	1	59
60	1.00					0	0	0	0	0	60
61	0.00					0	0	0	0	0	61
62	0.00	.88/.90/.88	0.89	.94/.92/.92	0.93	1	0	0	1	0	62
63	1.00	.68/.70/.72	0.70	1.04/1.06/1.04	1.05	0	0	0	1	0	63
64	0.00					0	0	0	1	0	64
65	1.00	1.04/1.06/1.06	1.05	1.08/1.08/1.06	1.07	0	0	0	1	0	65
66	1.00					0	0	0	1	0	66
67	1.00					1	0	0	1	0	67
68	0.00					0	0	1	1	0	68
69	1.00	1.02/1.0/1.02	1.01	.98/1.0/1.0	0.99	0	0	0	1	0	69
70	0.00					1	0	1	0	0	70
71	1.00					0	0	1	1	1	71
72	1.00					1	0	0	1	1	72
73	0.00					0	0	1	0	0	73
74	0.00	.50/.52/.52	0.51	.56/.60/.64	0.60	0	0	0	0	0	74
75	1.00					0	0	0	0	0	75
76	1.00					0	0	0	0	0	76
77	1.00					0	0	0	0	0	77
78	0.00					0	0	0	0	0	78
79	0.00					1	0	0	0	0	79
80	1.00					0	0	0	0	0	80
81	0.00	.68/.66/.58	0.64	.80/.84/.88	0.84	0	0	0	0	0	81
82	0.00	.88/.86/.88	0.87	.96/.98/.96	0.97	0	0	0	0	0	82
83	0.00	.56/.54/.54	0.55	.56/.60/.62	0.59	0	0	0	0	0	83
84	1.00	.96/.98/.98	0.97	1.02/1.04/1.04	1.03	0	0	0	0	0	84

MASTER CHART

CaseNo	ESR_CRP	cIMTRt	cIMTRt Avg.	cIMTLt	cIMTLt avg.	Aorta_Asc	Aorta_Arch	Aorta_Desc	Aorta_Abd	Innominate lesion	CaseNo
85	0.00					0	0	0	0	0	85
86	1.00	.5/.5/.5	0.50	.53/.54/.63	0.57	1	0	0	0	0	86
87	0.00					0	0	0	1	0	87
88	1.00	.68/.66/.64	0.66	.66/.68/.68	0.67	0	0	0	0	0	88
89	1.00					0	0	0	1	0	89
90	0.00					0	0	0	0	0	90
91	1.00	1.26/1.24/1.24	1.25	1.16/1.18/1.18	1.17	0	0	0	0	0	91
92	1.00					0	0	1	0	0	92
93	0.00					0	0	1	1	0	93
94	0.00					0	0	0	0	0	94
95	1.00					0	0	0	0	1	95
96	0.00					0	0	0	0	0	96
97	1.00					0	0	0	0	0	97
98	1.00	.60/.62/.64	0.62	.54/.60/.64	0.59	0	0	0	1	0	98
99	0.00					0	0	0	0	0	99
100	0.00					0	0	0	0	1	100
101	0.00	.62/.64/.66	0.64	.60/.62/.62	0.61	0	0	0	1	0	101
102	0.00	.68/.66/.68	0.67	.58/.56/.56	0.57	0	0	0	0	0	102
103	1.00	1.28/1.24/1.24	1.25	1.18/1.16/1.16	1.17	1	0	0	0	0	103
104	1.00					0	0	0	1	1	104
105	0.00					0	0	1	0	0	105
106	0.00	.60/.64/.58	0.61	.50/.54/.54	0.53	0	0	0	1	0	106
107	0.00	.64/.66/.60	0.63	.48/.50/.52	0.50	0	0	0	0	0	107
108	0.00					0	0	0	1	0	108
109	0.00					0	0	0	0	0	109
110	1.00					0	0	1	0	0	110
111	0.00	.56/.56/.58	0.57	.54/.50/.50	0.51	0	0	0	0	0	111
112	0.00	.96/.98/.98	0.97	.90/.88/.88	0.89	0	0	0	0	0	112
113	1.00					0	0	0	0	0	113
114	0.00					0	0	0	0	1	114
115	1.00					0	0	0	0	1	115
116	0.00	.62/.60/.64	0.62	.56/.54/.54	0.55	0	0	0	1	0	116
117	0.00					0	0	0	0	0	117
118	0.00					0	0	0	0	0	118
119	1.00					0	0	1	1	0	119
120	0.00					0	0	1	0	0	120
121	1.00	1.28/1.26/1.26	1.27	1.02/1.06/1.08	1.05	0	0	0	0	0	121
122	1.00					0	0	1	1	0	122
123	0.00					0	0	0	0	1	123
124	0.00	.86/.88/.90	0.88	.80/.82/.84	0.82	0	0	0	0	0	124
125	1.00	.68/.64/.68	0.67	.60/.62/.64	0.62	0	0	0	0	0	125

MASTER CHART

LSCA Lesion	RVA lesion	LVA lesion	RCCA lesion	LCCA lesion	RICA liones	LICA lesion	CorArt lesion	PulmArt lesion	CeliacArt lesion	CaseNo
1	0	0	1	1	0	0	1	0	0	1
1	0	1	0	0	0	0	0		0	2
1	0	0	0	1	0	0	1	0	1	3
1	0	1	0	1	0	0	0	0	0	4
1	0	1	1	1	0	0	0	0	0	5
1	1	1	1	1	0	0	0	0	1	6
1	0	1	0	1	0	0	0	0	0	7
1	0	0	0	0	0	0	0	0	0	8
1	0	0	1	1	0	0	0	0	1	9
1	0	0	0	1	0	0	0	0	1	10
1	0	1	0	0	0	0	0	0	1	11
0	0	0	0	0	0	0	0	0	0	12
1	0	1	1	1	0	0	0	1	0	13
1	0	1	1	1	0	0	0	0	1	14
1	0	1	0	0	0	0	0	0	1	15
0	0	0	0	0	0	0	0	0	1	16
1	1	1	1	0	0	0	0	0	0	17
1	0	0	1	1	0	0			0	18
0	0	0	0	0	0	0			1	19
0	0	0	0	0	0	0			0	20
0	0	0	0	0	0	0	0	0	0	21
1	0	0	0	1	0	0	0	0	1	22
0	0	0	0	0	0	0	0	0	0	23
0	0	0	0	1	0	0	0	0	0	24
1	0	0	1	0	0	0	1	0	0	25
1	0	1	0	1	0	0	1	0	0	26
1	0	0	0	1	0	0	0	1	1	27
1	0	0	0	0	0	0	0		0	28
0	0	0	0	0	0	0	0	0	0	29
0	0	0	0	0	0	0		0	0	30
0	1	0	1	0	0	0			0	31
1	0	0	0	1	0	0	1	0	0	32
0	0	0	0	1	0	0	0	0	1	33
1	0	0	0	1	0	0	0		0	34
1	0	0	0	1	0	0	1		1	35
0	0	0	0	0	0	0	0	0	1	36
1	0	0	0	0	0	0			1	37
1	0	0	0	1	0	0	0	0	1	38
0	0	0	0	0	0	0	1		1	39
1	0	0	0	0	0	0	0	0	1	40
1	0	0	1	1	0	0	1	0	0	41
0	0	0	0	0	0	0	0	0	0	42

MASTER CHART

LSCA Lesion	RVA lesion	LVA lesion	RCCA lesion	LCCA lesion	RICA liones	LICA lesion	CorArt lesion	PulmArt lesion	CeliacArt lesion	CaseNo
0	0	0	0	0	0	0	1	0	1	43
0	0	0	1	1	0	0	0	0	0	44
0	0	0	0	0	0	0	0	1	1	45
1	0	0	0	0	0	0	0	0	1	46
0	0	0	1	1	0	0	1	1	1	47
0	0	0	0	0	0	0	0	0	1	48
1	0	0	0	0	0	0			1	49
0	1	0	0	0	0	0	0	0	1	50
0	0	0	0	0	0	0			1	51
1	0	0	0	0	0	1	1		1	52
0	0	0	0	0	0	0	0	0	0	53
1	0	0	1	1	0	0	0	0	0	54
0	0	0	0	0	0	0			1	55
1	0	0	0	1	0	0	1		1	56
0	0	0	0	0	0	0	0		0	57
0	0	0	0	0	0	0	0	0	1	58
1	0	0	1	1	0	0	0	0	0	59
1	0	0	1	1	1	1	0	0	0	60
1	1	0	1	1	0	0	0		1	61
0	0	0	0	0	0	0	0	0	1	62
0	0	0	0	0	0	0	0	0	0	63
1	0	0	0	0	0	1	0	0	1	64
0	0	0	0	0	0	0	0	0	0	65
1	0	0	0	1	0	0	0	0	1	66
0	0	0	0	1	0	0	0	0	1	67
0	0	0	0	0	0	0	0	0	0	68
0	0	0	0	0	0	0	0	0	0	69
1	0	0	0	1	0	0	0	0	0	70
1	0	0	1	1	0	0	0	0	0	71
1	0	0	0	1	0	0	0	0	1	72
1	0	0	0	1	0	0	0	0	0	73
0	0	0	1	0	0	0	0	0	1	74
0	0	0	0	1	0	0	0		0	75
1	0	0	1	1	0	0	0	0	1	76
1	0	0	0	1	0	0	0	0	1	77
1	0	0	1	1	0	0	0	0	0	78
1	0	0	0	1	0	0	0	0	0	79
1	0	0	1	1	0	0	0	0	1	80
0	0	0	0	0	0	0	0	0	0	81
1	0	0	0	0	0	0	0	0	1	82
0	0	0	0	0	0	0	0	0	1	83
0	1	0	0	0	0	0	0	0	0	84

MASTER CHART

LSCA Lesion	RVA lesion	LVA lesion	RCCA lesion	LCCA lesion	RICA liones	LICA lesion	CorArt lesion	PulmArt lesion	CeliacArt lesion	CaseNo
0	0	0	0	0	0	0	0	0	1	85
1	0	0	0	0	0	0	0	0	0	86
0	0	0	0	0	0	0	0	0	0	87
1	0	0	0	0	0	0	0	0	0	88
1	0	0	0	0	1	0	0	0	1	89
1	0	0	1	0	0	0	0	0	0	90
1	0	0	1	0	0	0	1	1	0	91
1	0	0	0	1	0	0	0	1	0	92
1	0	0	0	0	0	0			1	93
0	0	0	1	1	0	0			1	94
1	0	0	1	1	0	0	0	0	0	95
0	0	0	0	0	0	0	0		0	96
1	0	0	0	0	0	0	0		0	97
1	0	0	0	0	0	0	0	0	0	98
1	1	1	1	1	0	0	0	1	0	99
0	0	1	0	1	0	0	1	0	1	100
1	0	0	0	0	0	0	0	0	0	101
0	0	0	0	0	0	0	0	0	1	102
1	0	0	0	0	0	0	0	0	0	103
1	0	0	1	1	1	0	0	0	1	104
1	0	0	0	0	0	0	0	0	0	105
0	0	0	0	0	0	0	0	0	0	106
1	0	0	0	0	0	0	0	0	0	107
0	0	0	0	1	0	0	0	0	0	108
1	0	0	1	0	0	0	1	0	1	109
1	0	0	1	1	0	0	0	0	1	110
1	0	0	0	0	0	0	1	0	0	111
0	0	0	0	0	0	0	0	0	0	112
0	0	0	0	0	0	0	0	0	0	113
1	0	1	0	1	0	0	0	0	0	114
0	0	0	1	0	0	0	0	0	0	115
0	0	0	0	0	0	0	0	0	0	116
1	0	0	0	0	0	0	0	0	0	117
1	1	1	1	1	0	0	1	0	1	118
0	0	0	0	0	0	0	0	0	0	119
1	0	0	0	0	0	0	0	0	1	120
1	0	0	0	0	0	0	0	0	0	121
1	0	0	0	1	0	0	0	0	0	122
0	1	0	1	1	0	0	0	0	0	123
1	0	0	0	0	0	0	0		0	124
1	0	0	0	0	0	0	0	0	1	125

MASTER CHART

SMA lesion	IMA lesion	RRA lesion	LRA lesion	bilate RA lesion	Iliac lesion	CFA lesion	SFA lesion	ClinicalCr C+	ClinicalCr P+	CaseNo
0	0	0	1	0.00	0	0	0	1	0	1
0	0	0	0	0.00	0	0	0	0		2
1	0	1	0	0.00	0	0	0	1	0	3
0	0	0	0	0.00	0	0	0	0	0	4
0	0	0	0	0.00	0	0	0	0	0	5
0	0	0	1	0.00	0	0	0	0	0	6
1	0	0	0	0.00	0	0	0	0	0	7
0	0	0	0	0.00	1	1	0	0	0	8
0	0	0	0	0.00	0	0	0	0	0	9
1	0	0	0	1.00	0	0	0	0	0	10
0	0	0	0	0.00	0	0	0	0	0	11
0	0	0	0	1.00	0	0	0	0	0	12
1	0	0	0	0.00	0	0	0	0	1	13
1	0	0	0	0.00	0	0	0	0	0	14
0	0	0	0	0.00	0	0	0	0	0	15
1	0	0	0	0.00	0	0	0	0	0	16
0	0	0	0	1.00	1	0	0	0	0	17
0	0	0	0	0.00	0	0	0	0	0	18
0	0	0	0	1.00	0	0	0			19
1	0	0	1	0.00	0	0	0			20
0	0	0	0	1.00	1	0	0	0	0	21
1	0	0	1	0.00	1	0	0	0	0	22
0	0	1	0	0.00	1	0	0	0	0	23
0	0	0	0	0.00	0	0	0	0	0	24
0	0	0	0	0.00	0	0	1	1	0	25
0	0	0	0	0.00	0	0	0	1	0	26
0	0	0	0	0.00	0	0	0	0	1	27
0	0	0	0	0.00	0	0	0	0		28
0	0	1	0	0.00	0	0	0	0	0	29
0	0	0	0	0.00	0	0	0		0	30
0	0	0	0	1.00	0	0	0			31
0	0	0	0	0.00	0	0	0	1	0	32
0	0	0	0	0.00	0	0	0	0	0	33
0	0	0	0	0.00	0	0	0	0		34
1	0	0	0	1.00	0	0	0	1		35
1	0	0	0	1.00	0	0	0	0	0	36
1	1	0	1	0.00	0	0	0			37
0	0	0	0	0.00	0	0	0	0	0	38
0	0	0	0	0.00	0	0	0	1		39
0	0	1	0	0.00	1	0	0	0	0	40
0	0	0	0	0.00	0	0	0	1	0	41
0	0	0	0	0.00	0	0	0	0	0	42

MASTER CHART

SMA lesion	IMA lesion	RRA lesion	LRA lesion	bilate RA lesion	Iliac lesion	CFA lesion	SFA lesion	ClinicalCr C+	ClinicalCr P+	CaseNo
1	0	0	1	0.00	0	0	0	1	0	43
0	0	0	0	0.00	0	0	0	0	0	44
1	0	0	1	0.00	0	0	0	0	1	45
0	0	0	0	0.00	0	0	0	0	0	46
1	0	0	0	0.00	0	0	0	1	1	47
1	1	0	0	1.00	0	0	0	0	0	48
0	0	0	0	0.00	0	0	0			49
0	0	0	0	0.00	0	0	0	0	0	50
0	0	1	0	0.00	0	0	0			51
1	0	1	0	0.00	0	0	1	1	0	52
1	0	0	0	0.00	0	0	0	0	0	53
1	0	0	0	0.00	0	0	0	0	0	54
0	0	0	1	0.00	0	0	0			55
1	0	0	0	1.00	0	0	0	1		56
0	0	1	0	0.00	0	0	0	0		57
1	0	0	0	1.00	0	0	0	0	0	58
1	0	0	0	0.00	0	0	0	0	0	59
0	0	0	0	0.00	0	0	0	0	0	60
1	0	0	0	0.00	0	0	0	0		61
0	0	1	0	0.00	0	0	0	0	0	62
1	0	0	1	0.00	0	0	0	0	0	63
1	0	0	0	1.00	1	0	0	0	0	64
0	0	1	0	0.00	0	0	0	0	0	65
1	0	0	0	1.00	0	0	0	0	0	66
1	0	0	0	1.00	0	0	0	0	0	67
0	0	0	1	0.00	0	0	0	0	0	68
0	0	1	0	0.00	0	0	0	0	0	69
0	0	0	0	1.00	0	0	0	0	0	70
0	0	0	0	0.00	0	0	0	0	0	71
0	0	1	0	0.00	0	0	0	0	0	72
0	0	0	0	0.00	0	0	0	0	0	73
0	0	0	1	0.00	0	0	0	0	0	74
0	0	0	0	0.00	0	0	0	0		75
0	0	0	0	0.00	0	0	0	0	0	76
0	0	1	0	0.00	0	0	0	0	0	77
1	0	0	0	0.00	0	0	0	0	0	78
0	0	0	0	1.00	0	0	0	0	0	79
0	0	0	0	0.00	0	0	0	0	0	80
0	0	0	1	0.00	0	0	0	0	0	81
1	0	0	0	1.00	0	0	0	0	0	82
0	0	0	0	0.00	0	0	0	0	0	83
0	0	0	0	0.00	0	0	0	0	0	84

MASTER CHART

SMA lesion	IMA lesion	RRA lesion	LRA lesion	bilate RA lesion	Iliac lesion	CFA lesion	SFA lesion	ClinicalCr C+	ClinicalCr P+	CaseNo
0	0	0	0	0.00	0	0	0	0	0	85
0	0	0	0	0.00	0	0	0	0	0	86
0	0	0	1	0.00	1	0	0	0	0	87
0	0	0	0	0.00	0	0	0	0	0	88
0	0	0	0	0.00	1	0	0	0	0	89
0	0	0	0	0.00	0	0	0	0	0	90
0	0	0	0	0.00	0	0	0	1	1	91
0	0	0	0	0.00	0	0	0	0	1	92
0	0	0	0	0.00	0	0	0			93
0	0	0	0	0.00	0	0	0			94
1	0	0	0	1.00	0	0	0	0	0	95
0	0	0	0	1.00	0	0	0	0		96
0	0	0	0	0.00	0	0	0	0		97
0	0	0	0	0.00	0	0	0	0	0	98
0	0	0	1	0.00	0	0	0	0	1	99
0	0	1	0	0.00	0	0	0	1	0	100
0	0	0	0	1.00	0	0	0	0	1	101
1	0	0	0	1.00	0	0	0	0	1	102
0	0	0	0	0.00	0	0	0	0	0	103
1	0	0	1	0.00	0	0	0	0	0	104
0	0	0	0	0.00	0	0	0	0	0	105
0	0	0	0	1.00	0	0	0	0	0	106
0	0	0	0	0.00	0	0	0	0	0	107
0	0	0	0	0.00	1	0	0	0	0	108
1	0	0	1	0.00	0	0	0	1	0	109
1	0	0	0	0.00	0	0	0	0	0	110
0	0	0	1	0.00	0	0	0	1	0	111
0	0	0	1	0.00	0	0	0	0	0	112
0	0	0	1	0.00	0	0	0	0	0	113
0	0	0	0	0.00	0	0	0	0	0	114
0	0	0	0	0.00	0	0	0	0	0	115
0	0	0	0	1.00	0	0	0	0	0	116
0	0	0	0	0.00	0	0	0	0	0	117
0	0	1	0	0.00	0	0	0	1	0	118
0	0	0	0	1.00	0	0	0	0	0	119
1	0	0	0	1.00	0	0	0	0	0	120
0	0	0	0	0.00	0	0	0	0	0	121
0	0	1	0	0.00	0	0	0	0	0	122
0	0	0	0	0.00	0	0	0	0	0	123
0	0	0	0	0.00	0	0	0	0	0	124
1	0	0	0	1.00	0	0	0	0	0	125

MASTER CHART

Ds Activity on first visit	Ds activity on last follow up visit	Type of T.A.	Resp.of Med.Tt	Response of Intervent. Tt.
1	3	2	1	1
3	1	3	3	4
3	3	5	1	2
2	2	1	3	1
1	2	1	2	1
2	2	5	2	1
1	1	1	3	1
3	3	5	2	1
1	1	5	3	1
2	2	5	2	2
1	1	2	3	2
2	2	3	2	1
2	3	5	1	1
1	1	5	4	4
2	2	1	2	1
1	3	5	1	1
2	3	5	1	2
1	1	1	4	4
2	2	3	2	1
1	2	4	2	1
3	2	4	3	1
1	1	5	4	4
3	3	4	4	4
2	3	1	1	4
2	2	5	2	2
1	1	1	3	1
2	2	5	2	2
2	2	5	2	
3	3	4	1	1
2	2	2	2	4
1	2	5	2	2
2		1	2	2
2	3	5	1	1
1	2	1	2	1
1	2	5	2	2
2		5	1	1
3	3	5	1	4
1	2	5	2	3
1	2	2	2	1
1	1	5	3	2
1	3	1	1	2
1		5	4	

MASTER CHART

Ds Activity on first visit	Ds activity on last follow up visit	Type of T.A.	Resp.of Med.Tt	Response of Intervent. Tt.
2	1	5	3	1
3	3	1	1	1
1	2	4	2	2
3	3	5	1	1
2	2	5	2	1
1	3	5	1	1
1	1	1	3	4
1	2	1	2	2
2	1	3	3	4
2	2	5	2	4
3	3	1	1	4
3	3	5	1	2
2	3	3	1	4
2	2	5	2	1
1	1	3	1	1
3	3	4	1	1
1	1	1	3	2
1	1	1	3	2
2	2	5	2	2
2		4	1	4
1	3	5	1	2
2	3	5	1	1
1	2	5	3	2
1	1	5	3	2
1	3	5	1	2
2	3	2	1	1
1	1	3	3	2
2	2	5	2	2
1	1	3	3	1
1	3	5	1	2
2	2	2	2	2
2	3	5	1	1
1	1	1	4	
1	1	1	3	1
1	3	5	1	2
2	2	1	2	1
2	2	5	2	1
1	2	3	2	4
2	3	4	1	4
2	3	3	1	2
3	2	4	2	4
1	3	1	1	1

MASTER CHART

Ds Activity on first visit	Ds activity on last follow up visit	Type of T.A.	Resp.of Med.Tt	Response of Intervent. Tt.
3	2	3	2	
1	2	1	2	4
2	2	3	3	4
1	2	1	2	3
1	2	5	2	2
2	1	1	3	1
1	1	1	3	1
1	1	5	3	4
2	2	5	2	
3	3	1	2	4
1	3	5	1	2
2	2	2	2	2
1	1	1	3	
1	1	4	3	4
2	2	5	2	4
2	2	5	2	4
2	3	5	1	3
2	3	2	1	1
1	3	1	4	4
1	2	5	2	1
2	2	2	2	1
2	2	3	2	4
2	2	1	2	4
3	3	5	2	1
2	2	5	2	4
1	2	3	2	2
3	3	1	2	4
3	3	5	1	1
1	3	3	1	4
2	2	1	4	4
1	1	1	4	4
2	1	5	3	1
3	3	1	2	2
2	2	5	3	4
1	1	4	4	4
2	2	5	4	4
1	1	1	3	2
1	1	5	3	1
2	3	1	1	1
2	2	1	2	4
1	2	3	2	1

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Submission time	15-Mar-2013 11:28PM
Total words	13125

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Takayasu Arteritis Demographic Features, Diagnosis, Clinical Presentation and Angiographic Profile. 1 Abstract AIM: To study the demographic profile, clinical presentation, diagnostic features, angiographic findings and treatment outcomes of patients with Takayasu arteritis. SPECIFIC OBJECTIVES : 1. To study the demographic profile of Indian patients with Takayasu arteritis. 2. To study the modes of clinical presentation of patients with Takayasu arteritis. 3. Evaluation of the applicability of different diagnostic criteria to Indian patients with Takayasu arteritis. 4. To study the angiographic findings in Takayasu arteritis based on aortography, peripheral and coronary angiography and to...